



Value Capturing through Business Model Adaptations to Sustainability

– case studies from the primary production stage of the Swedish agri-food supply chain

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Abstract

Incomplete competition in the agri-food supply chain is a concern for many weaker actors, such as farmers. This qualitative study is done to develop an understanding of how business model innovation in farm businesses changes farmers' perceived satisfaction with supply chain value capture. Empirical data come from seven case studies of active conventional and organic grain farmers in four Swedish provinces. Inspired by grounded theory, a cross-case and constant comparative analysis is done with abductive coding using Word and Excel to achieve the results. It is found that Lantmännen, as the largest grain organization in Sweden, has been able to implement the philosophy of an agricultural cooperative by creating dynamism in the grain supply chain and providing better bargaining power for farmers to capture more value. However, the cooperative's standard supply chain, offers better opportunities to conventional farmers than organic ones, leading organic farmers to seek alternative channels that are less centralized in bulk production. Findings also suggest that the cooperative, due to their challenging bargaining position with large retail actors, could only marginally increase the power of producers. It is shown that since farmers are not satisfied with supply chain value capture, much of their business model innovation is directed towards finding alternative sales channels.

Keywords: Business model innovation, Value creation, Value capture, Supply chain, Conventional farmers, Organic farmers, Lantmännen

Sammanfattning

Ofullständig konkurrens i livsmedelskedjan för jordbruksprodukter är en oro för många svagare aktörer, såsom jordbrukare. Syftet med denna kvalitativa studie är att utveckla en förståelse för hur affärsmodellinnovation i jordbruksföretag förändrar jordbrukarnas upplevda tillfredsställelse med att fånga värdet i leveranskedjan. Empiriska data härstammar från sju fallstudier av aktiva konventionella spannmålsodlare i fyra svenska provinser. Inspirerad av "*grounded theory*", "*a cross-case*" och "*constant comparative*" har analys utförts med "*abductive*" kodning med hjälp av användning av Word samt Excel för att uppnå resultat. Man har funnit att Lantmännen, som den största spannmålsorganisationen i Sverige, har kunnat implementera filosofin om ett jordbrukskooperativ genom att skapa dynamik i spannmålsförsörjningskedjan och ge bättre förhandlingsstyrka för lantbrukare att fånga mer värde. Dock erbjuder andelslagets standardleverantörskedja bättre möjligheter för konventionella jordbrukare än ekologiska, vilket leder till att ekologiska jordbrukare söker alternativa kanaler som är mindre centraliserade i bulkproduktion. Resultaten tyder också på att kooperativet på grund av sin utmanande förhandlingsposition med stora detaljhandelsaktörer bara kunde öka producenternas makt marginellt. Det visas att eftersom jordbrukare inte är nöjda med försörjningskedjan, är mycket av deras affärsmodellinnovation inriktad på att hitta alternativa försäljningskanaler.

Nyckelord: Affärsmodellinnovation, Värdeskapande, Värdefångst, Försörjningskedja, Konventionella jordbrukare, Ekologiska jordbrukare, Lantmännen

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Abbreviations

BM	Business Model
BMI	Business Model Innovation
CAP	Common Agricultural Policy
EU	European Union
GDPR	General Data Protection Regulation
ISO	International Organization for Standardization
NGO	Non-governmental Organization
OECD	Organization for Economic Co-operation and Development
R&D	Research and Development
SC	Supply Chain
SCB	Statistiska Centralbyrån ¹
SCM	Supply Chain Management
SEK	Swedish Krona ²
SMEs	Small and Medium-sized Enterprises
SSCM	Sustainable Supply Chain Management

¹ In English: Statistics Sweden

² Currency of Sweden

1. Introduction

This chapter begins by presenting the background of the subject and stating the problem, and based on the problems raised, identifies the aim and questions of the research. In the following, delimitations of the research are stated and a clear picture of the study process is expressed.

1.1. Background

Structural changes in agri-food supply chains over the past few decades have completely changed these sectors' business practices (Marques Vieira *et al.* 2013). Generally, Supply Chain (SC) is made up of a combination of actors such as suppliers, manufacturers, wholesalers, retailers, and end customers that act to meet the final consumer needs (Chopra & Meindl 2016). In this chain, each actor seeks to implement the most accurate business model for dealing with economic, social, and environmental issues. Therefore, these efforts have to be coordinated in such a way that explicitly lead to the creation of shared value among all stakeholders (Higgins *et al.* 2010; Porter & Kramer 2011; Nosratabadi *et al.* 2020).

Competitive advantage in the SC can be achieved by combining buyer-supplier capabilities (Skilton 2014). These capabilities can change the bargaining power and lead to value capture by distributing a disproportionate share of returns in favor of the buyer or supplier (*ibid.*). Therefore, given the role of SC structure in the ability to capture value, and the role of management in increasing the insight and efficiency of the organization, Supply Chain Management (SCM) can lead to the continuity of value-added activities in the agri-food sector (Revoredo-Giha & Leat 2010; Skilton 2014). It is stated that a successful SCM not only distributes the spoils of the chain fairly among the actors, but also improves the financial performance of all of them (Crook & Combs 2007).

As mentioned, each player in the SC seeks to optimize its own business model. A Business Model (BM) is a model in which a company offers value to its customers and encourages them to pay for that value (Bocken *et al.* 2013). Moreover, as a tool, a BM by identifying conflicting values helps to understand the pros and cons of value propositions, and can easily find places where a stakeholder can be

detrimental to other ones (Bocken *et al.* 2013). Therefore, since in every industry, inventions, new technologies, and human capital are the most common reasons for innovation, by commercializing these assets, innovative BMs can be designed to create and capture more value (Gambardella & McGahan 2010; Bocken *et al.* 2013; Grabowska 2015). In the agri-food sector also, innovation covers a wide range of stakeholder interactions, from farmers to consumers, as well as intermediaries such as the research community and consulting services (Faure *et al.* 2018). In addition, it generates knowledge in this area that includes a variety of domains such as production methods, market organization, and eating habits (*ibid.*).

In general, agri-food sector is an end-to-end value chain that has many reciprocal nodes and individual sub-sectors (Davis 2019). In this sector, “agriculture” is referred to as the key to sustainability and innovation because farmers are directly connected to food origins and have central role amongst actors (Macken-Walsh 2011; Hooks *et al.* 2017; Kernecker *et al.* 2017). However, as it is stated, in industrial agriculture, farmers’ capabilities have been overlooked due to the reduction of agricultural communities as well as the expansion of production volume and standards (Fonte 2008). In addition, although farmers are rooted in their communities and ancestors and are not just looking for profit and income (Barth *et al.* 2017; Ulvenblad *et al.* 2019), incomplete competition in the agri-food SC has become a major concern for these weaker actors (Sorrentino *et al.* 2018). Therefore, since in the agri-food SC all stakeholders are not strong due to their low capacity to influence (Civera *et al.* 2019), hearing their voice can be a way to ensure a long-term and trust-based relationships (*ibid.*).

1.2. Problem statement

New standardizations for food safety and quality assurance issues, along with increasing consumer awareness, not only have changed the structure of the agri-food sector (Trebbin 2014), but also have created barriers for farmers or less powerful producers (Macken-Walsh 2011; Hooks *et al.* 2017). This less bargaining power as stated by Crook & Combs (2007), can force some actors to take actions. That is, strong actors use their power to negotiate by calculating the dependence of others on themselves in order to gain a higher percentage of profit (*ibid.*). For example, there are many farmers who are looking to make a profit by offering low prices because of their less bargaining power, knowing that traders may benefit from their ignorance of the market price (Courtois & Subervie 2015).

In order to meet these challenges, institutional innovation matters (Jia & Huang 2011). In general, the power of an organization depends on the dependence of others on its resources. That is, given that a company has control over resources that few

competitors may have control of, the members of the chain that have these resources create dependency within the chain and gain bargaining power (Crook & Combs 2007). Therefore, entering a SC can lead to reduced uncertainty and survival (Crook & Combs 2007). It can also ensure the stability of enterprise by establishing long-term relationships, and keep them away from hostile environments (*ibid.*).

Fischer & Qaim (2014) note that collective action is an important strategy for small owners because it allows them to be competitive in changing environments. In this regard, one of the organizations that have increased the bargaining power of farmers through collective actions and reduced their costs, are agricultural cooperatives (Valentinov 2007). These cooperatives have largely neutralized opportunistic behaviors and the potential threat of quasi-rent by outsiders by controlling the activities (*ibid.*).

However, it should be noted that members' commitment to these organizations can be different because the benefits and costs are not the same for all farmers (Fischer & Qaim 2014). In other words, it is the previous benefits that create mutual motivation and have a positive effect on the intensity of collective participation (*ibid.*). Apart from that, in many cases small farms cannot benefit from the economies of scale of large organizations (Davis 2019). In addition, the complexity of contracts in agricultural production has become a problem (Jia & Huang 2011). For instance, in the grain market, large buyers of agricultural products sometimes consider special requirements in their contracts (OECD 2005). These contracts can include the exact type of seed used, fertilizer, volume and delivery date, and even the moisture and size of the crop. Hence, the result for farmers can be a special contract without freedom of action (*ibid.*). Besides, although the production of homogeneous products in this sector can be efficient, the evolution of consumer demand requires the production of distinct products (Cucagna & Goldsmith 2018). As a result, due to the low differentiation in the crops, farmers usually have little marginal profit and mostly are dependent on market flow and transactions (Cucagna & Goldsmith 2018; Davis 2019).

Furthermore, organizations may be depend on another entity for survival which reflects the strength of another actor in the SC (Crook & Combs 2007). In the agri-food SC, large retail chains have the most market power due to their structure, and their entry into the market has upset the balance of this chain (OECD 2014; Xhoxhi *et al.* 2014). This power also is cited as one of the reasons for the transfer of risk and high costs to the farms (Xhoxhi *et al.* 2014). An example of their power is that when there is a shortage of supply, the price of the crops rise on the farms. But with high supply and lower prices of farm products, this price reduction is gradually observed in the retail section, and retailers benefit from this gradual reduction in sales to the final consumer (OECD 2005).

Based on the problems mentioned and power imbalances in the agri-food SC, farmers' economic conditions can easily be threatened. They are the actors that play an important role in agricultural employment, and ignoring their needs can not only lead to leaving the business, but consequently can threaten the social sustainability of rural areas (Valentinov 2007; Berti & Mulligan 2016). These householders own 75% of the world's agricultural land, and have a significant contribution to the world's food production (Valentinov 2007; Lowder *et al.* 2016). Most importantly, their practical experiences and informal knowledge are mentioned as complementary to formal and limited knowledge of this sector (Šūmane *et al.* 2018). Farmers' needs and motivations stem from what they call value, and to motivate them, their unmet needs should be answered (Öhlmér *et al.* 1998). Therefore, it is important to understand how existing SC opportunities can support them to achieve their expected value.

1.3. Aim and research questions

In view of the above, the present study *aims to develop understanding of how business model innovation (BMI) in farm businesses changes farmers' perceived satisfaction with SC value capture.*

This study also will seek to answer the following questions:

- 1) How have farmers adapted their BMs to fit with opportunities presented in the studied SCs?*
- 2) How have the changes in farms' BMs affected the share of chain value farmers receive?*
- 3) How have the changes in farms' BMs affected farm-level operations and costs?*

1.4. Scope and delimitations of the study

In order to give meaning to the answers of the research questions and provide a complete understanding of the subject under study, the researcher's own limitations and scope of the study are presented as below:

1.4.1. Delimitations

The following study focuses on active Swedish grain farmers. The importance of focusing on grain is because it is the main component of human diet (Awika 2011). Grain is also used for livestock consumption and the production of renewable energy sources (Spiertz & Ewert 2009). The reason for choosing Sweden is that this country is often cited as a country that has made great strides in the field of sustainable food production in many fields and regions (Swedish Government 2016). Thus, studying Sweden is window into identifying barriers, challenges and opportunities that may be relevant to other countries (Ulvenblad *et al.* 2019).

In this study, the researcher focuses only on the initial phase of the SC. Therefore, other actors will not be studied in this research.

Finally, due to the spread of Coronavirus³ and in order to maintain the social distance, the researcher decided to conduct interviews online / by telephone instead of going directly to the farms.

1.5. Thesis outline

The general structure of this research is as follows: Chapter (1) provides a preliminary explanation of the study, problem, aim, and research questions as well as delimitations of the research. Theoretical framework and a review on BM, SC, and agri-food sector is paid to in Chapter (2). Chapter (3) starts with reviewing the philosophy and methodology of the research, and then describes how the data is collected and analyzed. This Chapter ends with an explanations of quality criteria and ethical aspects. Empirical background and case descriptions are described in Chapter (4). In Chapter (5) using the cross-case analysis, the similarities and differences of case studies are identified and the general results are presented by performing a constant comparative method. Chapter (6) discusses the answers to the research questions with the help of existing theories. Finally, the research ends with a general conclusion, setting out the limitations and future suggestions in Chapter (7).

³ Coronavirus is a pandemic that started in humans in Wuhan, China in December 2019 and soon spread throughout the world (Wikipedia 2020).

2. Theoretical framework and literature review

This chapter provides a comprehensive overview of the theoretical literature on the current status of the dissertation. Therefore, the existing literature on business models and business model innovations as well as supply chain and its structure will be reviewed. In the following, the agri-food sector and its related issues also are described.

2.1. Business model

In general, Teece (2010) defines a BM as a way in which a company delivers value to customers and motivate customers to pay for that value. He also mentions to the BM as financial “architecture” that explains how a company can gain economic value from its resources and capabilities (*ibid.*). A BM is a conceptual tool that a company creates value for its end customers with the logic of its performance in a specific area and through a set of elements (Grabowska 2015). This conceptual tool as Bocken *et al.* (2014) have pointed out, defines the competitive strategy of companies in terms of product and service design, their production costs, as well as their difference from competitors according to the value they offer.

BM's are made of interrelated elements, and hence, it is logical that researchers suggest different components to design its structure (Grabowska 2015). However, BM of Osterwalder and Pigneur (2005, 2010) is arguably the most popular among management practitioners (*ibid.*). Bocken *et al.* (2014, p. 43) describe these elements as: “*the value proposition (product/service offering, customer segments, and customer relationships), activities, resources, partners, distribution channels (i.e. value creation and delivery) and cost structure, and revenue model (i.e. value capture).*”

These elements as it is shown in Figure 1 are defined comprehensively by Grabowska (2015) as: (1) Client Segments: Individuals and organizations that a company plans to reach and serves service for; (2) Value Proposition: Products and services that create value for a portion of end customers; (3) Distribution Channels: The methods that a company applies to convey value proposition and to

communicate with different segments of its customers; (4) Client Relationships: Features of relationships that connect a company with representatives of a particular customer section; (5) Revenue Flows: The amount of volume produced along with its services by a company that is offered for each market service; (6) Key Resources: The vital resources needed for a company to function properly; (7) Key activities: The activities that a company should do in order to be effective; (8) Partner Network: Refers to the suppliers' networks as well as partners who have influence on the efficient performance of a company, and (9) Cost Structure: All costs associated with using an especial BM.

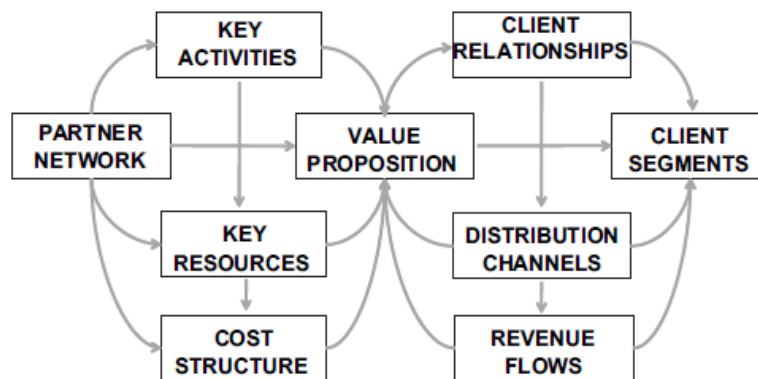


Figure 1. Osterwalder's decomposition of a BM (Chesbrough 2010, p. 359)

2.1.1. Sustainable business models

Aside from intra-organizational issues, BMs also refer to partners and customers who are outside the organization. Therefore, as the need for collaboration between companies and other stakeholders increase due to the global sustainability pressures (Lowitt 2013), one can no longer expect value creation by independent companies (Beattie & Smith 2013). In other word, value can be created only by working with parties outside the company through formal or informal relations (*ibid.*).

In general, three main pillars are identified through which BM can be analyzed to examine the issues of sustainability (Bocken *et al.* 2014). The first pillar as shown in Figure 2, is value proposition which mentions to the type of product and service that a business seeks to provide (Chesbrough 2010). Value proposition plays a key role in value exchange between stakeholders (Genovese *et al.* 2017). In traditional models, it was the economic value that all companies pursued with a focus on products, but nowadays, in order to address sustainability dimensions, priority is given to the development of intangible values (*ibid.*). The next pillar is value creation & delivery which connect the business to the end customer through essential activities (Chesbrough 2010). Value creation as the heart of any BM comes from new markets and business opportunities, and can lead to value capture

by delivering goods and services to customers (Bocken *et al.* 2014). Value capture as the third pillar, points to the ways that lead to earn money through delivered processes and created value (Chesbrough 2010). In this regard, a potential value overflow occurs when all actors work together properly and the values are translated practically along with sustainability issues (Genovese *et al.* 2017; Davies & Doherty 2018).

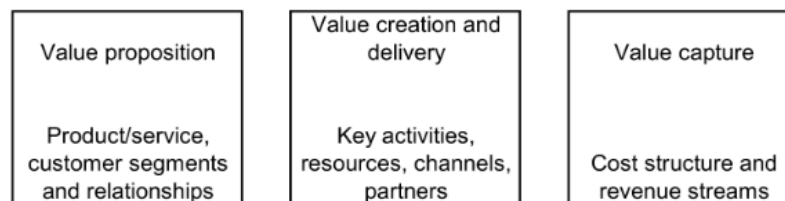


Figure 2. BM pillars (Bocken *et al.* 2014, p. 43)

Bocken *et al.* (2013) point out that sustainable BMs must be economically sustainable as a prerequisite, and they have to help companies to capture economic along with creating environmental and social value. Integrated environmentally friendly activities in strategic management due to sustainability, is one of the main factors of success in competition and creates a new role for companies in the social field (Nosratabadi *et al.* 2020). Hence, for sustainability, structure and culture of the company as well as cooperation with all stakeholders in the system of which the company is a part, should be addressed (Stubbs & Cocklin 2008).

2.1.2. Business model innovation

Companies are constantly looking for new ways and opportunities to enhance their competitiveness (Grabowska 2015). On the one hand, gaining a competitive advantage in the growing and turbulent environment in which companies operate, definitely requires the use of innovation and innovative solutions (*ibid.*). On the other hand, there are some major factors such as large-scale globalization, short production cycles, and information role that urge the need for innovations (*ibid.*). This turmoil requires a strategic agility in order to prevent the obsolescence of current products and services, and also maintain a comparative advantage over competitors (Cheah *et al.* 2018). Hence, a company must seek experimentation and learn how to adapt to technological changes (*ibid.*). Based on what is proposed, a fundamental shift in the aims and all aspects of doing business is necessary and here, it is an “innovation” that offers a potential approach to change and rethinking the perception of value (Bocken *et al.* 2014).

Innovation generally seeks new forms of intangible values such as customer well-being and how the company captures value through transactional value (Zott *et al.* 2011; Beattie & Smith 2013). This, in the BM can be created by adopting new

approaches to the commercialization of core assets (Gambardella & McGahan 2010). According to Casadesus-Masanell & Ricart (2010), BMI refers to a fundamental change in competitive game or deregulation. Therefore, the development of a BM depends on identifying potential improvements that, with minor adjustments, can lead to ongoing innovation and financial gains (Schneider & Spieth 2013).

2.2. Supply chain

Supply Chain (SC), as shown in Figure 3, is an integrated process with a mix of actors such as manufacturers, processors, distributors, retailers, and end customers that act directly or indirectly in response to customer needs (Chopra & Meindl 2016). This chain is dynamic and includes all functions such as product development, marketing, operations, information flow, finance, and customer service (*ibid.*). In addition to the SC, there is a concept called the value chain which shows the value that can be added to a product at each stage (Nosratabadi *et al.* 2020). Hence, understanding both tangible and intangible values between actors can help identify relationships, interactions, and opportunities to create more value for mutual benefit (Bocken *et al.* 2013).

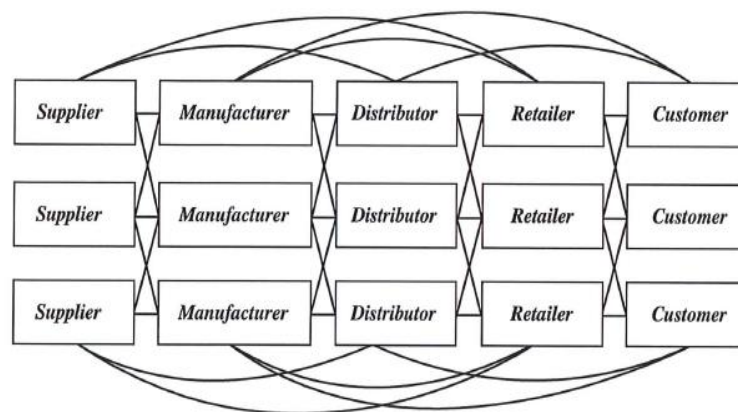


Figure 3. A schematic of a supply chain (Chopra & Meindl 2016, p. 15)

Lazzarini *et al.* (2001) point out that SCs are like networks. On the one hand, a SC can be more focused on horizontal relationships between companies affiliated with a particular business. On the other hand, its communication networks can be considered as regular organized relationships (Lazzarini *et al.* 2001). The traditional basis of buyer-supplier relationship management does not have the possibility of evaluating value sources such as strong social relationships and knowledge expertise. Network-based relationships also ignore the importance of vertical links in the creation of sequential interdependencies (*ibid.*). However, a combination of the two which is called “Netchain” is a “set of networks comprised of horizontal

ties between firms within a particular industry or group, which are sequentially arranged based on vertical ties between firms in different layers” (ibid., p. 7).

2.2.1. Supply chain management

In the process of converting raw materials into final products, each actor may have countless possibilities which along with the number of actors, can lead to the complexity of the SC (Beamon 1999). Thus, appropriate performance measures should be selected for analyzing this chain (*ibid.*). As Chopra & Meindl (2016) state, there is a close relationship between SC design and SC success. Therefore, to maintain SC’s competitiveness and success, technological change have to adapt to customer expectations (*ibid.*). In this way, this is the chain management that can maximize SC surplus and create customer value and competitive advantage for SC (*ibid.*). Based on this, Lummus & Vokurka (1999, p. 11), have defined a SCM as: *“all the activities involved in delivering a product from raw material through to the customer including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities.”*

It is stated that proper implementation of SCM increases coordination between firms in successive stages of production and reduces costs (Crook & Combs 2007). An estimate also shows that SCM has increased value added by up to 25% in addition to reducing costs (*ibid.*).

2.2.2. Sustainable Supply Chain Management (SSCM)

With the globalization of corporate supply and delivery systems, SCM and tracking have become more complex (Gardner & Cooper 2003). Also, consumers have become more conscious and are looking for the products that are ethically produced (Porter & Kramer 2006). Therefore, the impact of the weakest SC loop matters in the sustainability debate. In other words, no one can prioritize short-term profits as it may lead to negative impacts on the environment and society that are not part of the firms’ operating process (Porter & Kramer 2006; Paulraj 2011; Beske & Seuring 2014). Thus, in response to stakeholders’ needs, SSCM by managing the materials, information and capital flows along with creating cooperation between the companies involved in the chain, can consider the dimensions of economic, environmental, and social sustainability (Seuring & Müller 2008). Stakeholders include customers, governments and other domestic and foreign groups such as NGOs. Therefore, their coercion and incentives can lead to stronger implementation of SSCM (Brandenburg & Rebs 2015).

According to Beske & Seuring (2014), the combination of sustainability in the overall strategy of the organization depends on the ability of top management. In addition, interaction of different actors and setting a common goal lead to long-term relationships, reducing costs, and increasing competitive advantage (*ibid.*).

2.2.3. Supply chain dynamic capabilities

A company's competitive advantage depends on its tangible and intangible assets as well as performance in allocating resources (Qaiyum & Wang 2018). But how well a company is able to use its organizational resources for positive performance, depends on the capabilities of that company (*ibid.*). The basic premise is that short-term competitive situations that can determine long-term competitive goals, need to be changed and this is the concept of SC dynamics (Teece *et al.* 1997). These dynamic capabilities can be called inherently developed capabilities that are achieved through the implementation of sustainability practices by SCM, and can lead to continuous performance improvement (Mathivathanan *et al.* 2017). Beske & Seuring (2014) state that dynamic capabilities should be used to change the business environment and procedures as well as solve challenges and adapt to sudden external changes. Teece *et al.* (1997, p. 516) also see dynamic capabilities as "*the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments.*"

According to Beske (2012), understanding the needs of suppliers and developing partnerships are among the factors that lead to gaining a competitive advantage in the company. Therefore, considering that even the weakest member can affect the company's dynamic capabilities, the comprehensive development of chain partners is of particular importance (*ibid.*).

2.2.4. Supply chain governance structure

Governance stems from authority and power (Gereffi 2016). Power affects relationships between companies in significant yet contradictory ways. For example, the use of coercive power can reduce the actual commitment to the goal, while legal power can increase the commitment (Maloni & Benton 2000). While commitment and trust increase as interdependence increases, asymmetry between firms can erode (*ibid.*). Marketing power also can have far-reaching effects on the relationship between companies and the SC. That is, if marketing channel research affects trust, collaboration, and conflict resolution, it can lead to effective chain integration (*ibid.*).

Leverage market power and SC dynamics can give individual SCs a larger share of total rent over time (Cotterill 2001). Even in some cases, market power and governance structure can give companies increased marginal profits. This means

that one company, with its power and structure, can take another company's profits (*ibid.*). Boehlje *et al.* (1999, p. 19) state that: "*In any supply chain, the source of power and control in that chain is to a significant degree a function of the most unique or least substitutable resource. In essence the owner of the least substitutable resource has the most power to capture rents, transfer risk to others and have significant impact on what the chain does or does not do*". Accordingly, it can even be imagined that the greater power of downstream companies not only can stop upstream value-added activities, but also provide more control over the flow of information to the downstream (Davis 2019). Hence, since small suppliers are dependent on powerful buyers, this power asymmetry puts the supplier in control of the buyer (Gereffi 2016).

Moreover, strategic determinants can also reduce costs and provide economy rent to the entire chain (Lazzarini *et al.* 2001). Transaction costs are one of those whose control requires proper governance in the SC. Transaction costs refer to both ex-ante costs such as pre-contract search, bargaining costs, and ex-post costs such as supervision and execution (*ibid.*). In this regard, SC governance by providing incentive schemes, can reduce asymmetries and different interests in the chain that can lead to opportunistic behaviors in transactions (*ibid.*).

2.2.5. Value creation in SC

Integrated supplier-buyer relationships can significantly lead to performance enrichment as well as impact on chain performance (Maloni & Benton 2000). For example, processors can increase the value of their product by making changes in the appearance of the product. Wholesalers also can use the time and place item to create value as well. However, since the value of change in the shape of goods is greater than the value of time and place, value creation cannot be too great (Davis 2019). In addition, understanding the interactions and characteristics within each loop can also lead to the creation and distribution of value (Porter 2004). Company size, access to finance, technology, as well as a skilled and creative workforce are among these factors as well (Cucagna & Goldsmith 2018).

The other determinant is social structure which is a source of value in the network. That is, in a network, interpersonal relationships affect individual and collective behavior and performance (Lazzarini *et al.* 2001). Besides, local knowledge can be developed independently by agents and form specific skills for interactions. This learning can also emerge as a specific knowledge through systematic and collaborative efforts. That is, by combining individual abilities and developing specific procedures, value can be created (*ibid.*).

2.3. Agri-food sector

Agri-food sector is often thought of as a set of activities from production to consumption (Ericksen 2008). In general, the activities of the agri-food sector fall into four main categories: The first category concerns the production of food raw materials, which include land, labor, crop cultivation, animal husbandry, and care. This phase depends on a variety of factors, including weather conditions, technology, inputs, and government subsidy regulations. The second category is food processing and packaging, which includes various changes in food raw materials before being sent to the retail market. The next step is the distribution and retail of food, which includes food transfer and marketing. This distribution is influenced by regulations, the location of markets, and how they are organized. While these first three categories make up the agri-food SC, consumption as the last category includes many factors such as traditions, social values, and diet as well as globalization and advertising that have a great impact on consumers' choice (*ibid.*).

2.3.1. Sustainability of the agri-food sector

Agri-food sectors are generally complex because all actors in the chain have conflicting goals, meaning that some have an active role and some are influenced by others (Lamie & Deller 2017). This is because all of these actors are active at different time and space scales, and each stakeholder comes up with its own ideas for improving this sector (*ibid.*). Since agri-food sectors make up the bulk of the world economy and employment, addressing their sustainability issues must be a priority (Ulvenblad *et al.* 2019).

Regarding sustainability issues in this sector, three major problems are identified by Cagliano *et al.* (2016). The first is the association of agricultural production and issues such as ecosystem, human, and physical resources. Next is related to the role of producing sustainable healthy foods for human, and the last is about the specific features of the agri-food SC that companies focus on in terms of their sizes and different stability (*ibid.*). Because these environmental and socio-economic changes occur simultaneously and with uncertain consequences (Ericksen 2008), corporate responsibility matters.

Furthermore, with a focus on health, the environment, and social justice, interest in food improvement policies have increased (Lamie & Deller 2017). In addition, as Fischer & Hartmann (2010) note, new methods of food production, distribution and consumption, along with increasing consumer awareness and ethical concerns, require effective adaptation and cooperation to achieve benefits. Nguyen (2018) points out that an agri-food sector has economic sustainability when the activities of each actor in this chain be financially viable and lead to added value for all stakeholders. Also, if the distribution of this added value takes into account the

interests of vulnerable groups, this sustainability will gain social credibility. Besides, it is only the neutral or positive effects of these chain activities on the environment that can guarantee environmental sustainability.

2.3.2. BMIs and added value in the agri-food SC

Fischer & Hartmann (2010) consider new innovations as a solution that can positively affect the dynamics of the agri-food sector. It is also stated that innovations are catalysts for more sustainable development (Faure *et al.* 2018), and can be gained by changing the motivation, knowledge, or a combination that is not widely used in the agri-food sector (Fischer & Hartmann 2010).

In connection with the innovations made in this sector, Adekunle *et al.* (2018) by studying the value chain of small millet in India, concluded that a mixed customer intimacy-product leadership is the best way for producing high quality small millet. Jolink & Niesten (2015) also by introducing the speculation model they had identified among organic products, focused on increasing revenue by selling eco-products with goals for which economic profit is a priority. In this model, they have turned sustainability into a tool for profitability.

In the food distribution sector, where there are many risks associated with high energy consumption and cold storage, Shih & Wang (2016) introduced several innovative models using the Internet of Things (IoT) architecture and ISO 22,000 standard. Their models not only boosted annual pork sales, but also through new created distribution channels, added more than \$ 6.35 million to their revenue. A 10% reduction in energy consumption was also observed through this model.

In the retail sector, Di Gregorio (2017) introduced a creative place-based BM to create and capture value. His studies in the slow food industry in Italy (Coop Italia and Eataly) revived a passion for traditional food cultures. This innovation not only raised the supply and demand for local food products, but also increased social success, resilience, and sustainability. Regarding the consumption phase also, Martinovski (2016) conceptualized a BM by looking at consumer behavior. Using a customer-centric approach, he designed a model for healthy food products based on customer feedback.

Given these successful studies, it can be concluded that overcoming constraints in the agri-food sector depends on new innovations that can positively affect the dynamics of this sector (Béné *et al.* 2020). These innovations not only can enhance the participation of actors and create value, but as Civera *et al.* (2019) point, with financial and educational support, can empower dependent stakeholders and ensure long-term relationships.

3. Methodology

This chapter provides a detailed description of the following study's research method. For this purpose, the philosophy of the research is presented and then the research design, which includes literature review, data collection and analysis, is given. Finally, the chapter ends by addressing the qualitative criteria and ethical aspects of the research.

3.1. Research philosophy

Guba & Lincoln (1994) attributes the research philosophy to the views of the researcher. According to them, ontological and epistemological perspectives are among the influential factors that a researcher should pay attention to when choosing a study methodology. These two perspectives are explicitly related to the type of methodology used and assumptions obtained through the various views (*ibid.*). Ontology is the philosophy of reality, refers to something real that can be known. Epistemology also concerns how we can learn about things (*ibid.*).

In this research, the researcher follows the farmers' perceived reality on the farm as well as their adaptations with the perceived SC's opportunities. This is in line with the constructivist approach which goes back to the human experience of the world and suggests that reality is socially constructed (Mackenzie & Knipe 2006). Using this approach, researchers rely on the participants' views on the situation under study. Therefore, constructivism, unlike positivism, does not begin with a theory, rather this approach creates a theory or inductively improve a theory (*ibid.*). However, this is not really the whole story for the researcher, because he believes there is a truth that underlies the perceived reality. Hence, the philosophy of this research is based on the paradigm of realism as there is a reality completely independent of the researcher's and farmers' imaginations. Since there are different facts – several case studies – in this research and the researcher relies on the views of the participants who are part of the social structure, it can lead to the recognition of phenomena (Bocken *et al.* 2013). Thus, given that asking transcendent questions and seeking answers through internal critiques makes this situation realistic, and realism is critically interpreted (Cruickshank 2002), the researcher uses critical realism in order to know the whole truth. According to Fletcher (2017), human

knowledge reveals a small part of a deep and vast reality and critical realism helps researchers to explain social events. Critical realism has emerged from the positivist and constructivist paradigm wars and its framework is used for socio-scientific research (*ibid.*). Dobson (2001, p. 201) also writes quoting Bhaskar (1991) that “*Critical realism is a relatively new philosophy that antedates critical theory and postmodernist theory and together with them provide a response to the crisis of positivism*”.

In addition to an ontology, critical realism offers an epistemology (Fletcher 2017). Carter & Little (2007, p. 1317) define epistemology as a “*theory of knowledge which modifies methodology and justifies the knowledge produced.*” Simply stated, epistemology means what is knowledge and how can we come to know things. The main purpose of epistemological explanation is that epistemology will have a direct impact on methodology and method, because as Carter & Little (2007) point out, it is true that researchers are not always epistemologists or methodologists, but can find useful things. Having said that, this study’s epistemology is understanding the farmers’ philosophies that they implement on their farm. From a critical realist perspective, farmers’ behavior is in response to an “outside” existing reality, but that both the farmers and the researcher are limited in their ability to perceive (and therein react to) that reality. As a consequence, there is a need to be critically reflective in drawing any special conclusion.

3.2. Research design

In the present study, farmers with different work philosophies and their unique business strategies have been examined. Hence, the researcher has taken an inductive approach to understand the farmers’ actions since according to Mackenzie & Knipe (2006), in social science research, it is qualitative data that can provide rich insights into understanding human behavior. Induction is the movement from a specific to a general state, that is, phenomena of interest are observed empirically (Woiceshyn & Daellenbach 2018). This qualitative approach is used when the field of research is relatively new and phenomena are not well understood (Edmondson & McManus 2007; Given 2008). Qualitative research, instead of using traditional quantitative experimental tools, examines new relationships, abstract concepts, and operational definitions (Bettis 1991; Weick 1996). Furthermore, the researcher has limited his focus on a few cases to allow him to gather more information on each one. While this bounds the ability to accurately represent a whole population, it enables more exploration and flexibility. In this regard, Yin (1994), by mentioning to the exploratory and explanatory applications of case studies, states that they are very appropriate when the researcher seeks to realize current social phenomena that have complex textual relationships. Edmondson & McManus (2007) also point out

that an explicit dialogue can strengthen mutual relations and complements methodology and aligns theory and method (*ibid.*).

Given these explanations, the design of this research is based on multiple case studies as they provide a clear boundary and unit of analysis (Yin 2013). Moreover, it answers “how questions” (*ibid.*) which is consistent with the purpose of the following study. It also should be mentioned that although even a farm BM can provide a good understanding for the researcher, Eisenhardt (1989) states that the study of contradictory evidence is useful for both constructing creative insight and theory building. Moreover, receiving in-depth answers can provide a suitable sampling strategy for the researcher (*ibid.*). Besides, reproducibility as a result of using several work philosophies, in addition to creating more power and attractiveness, allows the researcher to have internal and reciprocal analysis. Therefore, since each farmer can create and capture value with his/her unique strategy, the unit of analysis in this research is the “farmer”.

3.2.1. Literature review

In general, the purpose of reviewing the literature is to provide a theoretical framework and determine certain boundaries in order to find the objectives, solve the problem and answer the research questions. That is to say, by providing a basis for the thesis, literature review seeks the current literature to expand and reflect on knowledge of complex phenomena and issues (Given 2008). Therefore, in order to cover the issues raised in this study, narrative literature review on each of the topics of BMs and BMIs, SC and its structure, and agri-food sector has been done. Narrative literature review has more flexibility because unlike quantitative parameters which emphasize on what should or should not be included, focuses on critical reflection, deep understanding, and finding gaps in current knowledge (Allen 2017). Since there is no pre-determined parameter for the research, this is suitable for an inductive method. Literature review has served as the starting point of this dissertation and the pillar for the study questions.

To browse the mentioned topics, most databases including Primo, Google Scholar, Web-of-Science, Elsevier Scopus, Emerald Insight, and SAGE Publications that all provide the information on business management and economics were selected. To do research, peer-reviewed articles, conferences, and books / chapters of authoritative books, all in English, were studied. In addition, search for words such as business model (s), business model innovation, supply chain structure, and agri-food supply (value) chain as well as value creation & value capture in agri-food supply chain were used in order to find the suitable topic, keywords and abstract. An example given by the researcher is shown below:

“business model*” AND (“food*” OR “agri-food”) AND “value capture”

Also, due to the existence of different results from the “business model” and “business models”, these terms were also examined separately. The use of the words “food chain”, “agriculture” and “agri-food chain” was also differentiated alternately due to the existence of some research conducted in one phase of the agri-food SC. Finally, because Given (2008) points to the researchers’ ignorance for the literature review of the methodology, a review regarding case study designs, sampling, data collection, quality criteria, and ethical issues was conducted to provide knowledge of the research designs and methods that can be used in this study.

3.2.2. Data collection

Eisenhardt (1989) states that to draw an accurate and comprehensive picture of the research, a combination of data collection methods should be used. Moreover, Alvesson (2003) cites interviewing as a method of generating knowledge in qualitative research. In this study, semi-structured interviews with different types of farmers were selected as the data collection method. Furthermore, websites, annual reports, and sustainability reports of agri-food companies and agricultural cooperatives to which farmers sell their products, were also studied as the secondary data in order to better understand their BMs presented at the farm level.

Case selection

The researcher’s selection of cases is guided by the interest in have farms who were participating in different SCs and who were using different innovations in their income and cost strategies. Therefore, the researcher has used a purposeful sampling strategy, as he is interested in having contrasting cases. In this regard, Freeman (2005) argues that the purposive sampling is continuously used in the iterative process to eliminate changes related to data that turn off all angles of a subject. Patton (2002) also referring to this sampling method, states that the purposive sampling includes selecting information-rich cases.

In qualitative studies, unlike quantitative ones that focus on statistical results from a clearly defined population, there are no specific standards for estimating sample size (Malterud *et al.* 2016) and in general, the concept of saturation is used to stop data collection (Saunders *et al.* 2017). Although this concept is rooted in the grounded theory (Saunders *et al.* 2017), it was used by the researcher to collect data. Also, it should be added that this concept as Saunders *et al.* (2017) state, has been accepted in a wide range of qualitative research approaches. According to Glaser & Strauss (1967, p. 61) “*Saturation means that no additional data are being found whereby the sociologist can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated.*” Saturation involves “*recruiting participants with differing*

experiences of the phenomenon so as to explore multiple dimensions of the social processes under study” (Cho & Lee 2014, p. 4). In using this concept, “*the researcher does not wait until data are completely collected to begin data analysis; instead, data collection and analysis occur simultaneously so that the analyzed data guides subsequent data collection*” (*ibid.*, p. 4). Given these explanations, because some farmers were not using a specific strategy and in fact, were subject to contracts with companies, the researcher continued interviewing until he felt he was not collecting novel experiences. However, it is important to note a significant deviation from grounded theory, in that the researcher had not the chance to return to the field to collect additional cases to further ground his developing theory in empirical evidence as the time of his project was limited. Therefore, it was no longer possible to analyze and collect data simultaneously. Instead, inspired by the concept of saturation, the researcher continued the interviews to the extent that he could have sufficient data for analysis in all required fields.

To do so, specific cases were identified through contacts with various informants, including grain industry experts, agri-sector interest group members, and academic researchers and a total of 7 farmers with different work philosophies were interviewed as samples of the study. In this regard, an attempt was made to balance between conventional and organic farmers. According to Yin (2009), this replication allows the “more successful” results of farmers of one types in one case and “less successful” results of another types in another to be easily understood. Besides, this not only allows the researcher to collect data from different types of potential participants in the market, it also as Stubbs & Cocklin (2008) state, increases the awareness of how participants use their innovative strategies. Thus, it can open the way for the researcher to understand how added value can be created and most importantly, how those innovations can be generalized. Moreover, this view by providing an external perspective on the innovative strategies, adds credibility to the results (*ibid.*).

Semi-structured interviews

As Bell *et al.* (2019) state, there are diverse strategies for conducting interviews, including structured, semi-structured and, unstructured ones. The first, or structured model covers predefined questions which evokes a questionnaire or survey. The unstructured type also seems to be a normal conversation which makes the results of the interview hard to predict (*ibid.*). But the semi-structured interview has open-ended questions, allowing new ideas to be explored and the depth of the subject to be brought on during the interview as a result of what the interviewee is saying (Creswell 2012; Bell *et al.* 2019). Here, the topics of interest are pre-defined, asking main questions are avoided, and the respondent answers the questions according to his/her opinion, which is in accordance with the inductive approach (*ibid.*). In this study, because the researcher expects to hear a valid story, where the interviewer

guides how to develop the story, semi-structured interviews are used. In other words, using structured interviews and asking too many precise questions could lead to more effort and attention from the respondents to the questions themselves than telling the researcher how to experience farming on the land.

The questions were designed based on a conceptual framework derived from the literature and research problem statement. Hence, the interview's content was about the farm BM, how to manage it, changes and developments in the farm as well as its opportunities and barriers. These questions were supplemented by complementary questions on BM components, the effects of changes on cost structure, revenue level, and product quality, to provide more interesting details, as noted by Kvale & Brinkmann (2009). In addition, a few specific questions related to farmers' understanding of their share in the SC were asked in order to build a complete and rich description. These questions were also asked in the final parts of the interview so as not to distract farmers. Besides, according to Kvale & Brinkman (2009, p. 161), maximum effort was made to design the structure of the interview in order to assure the quality of the interview and avoid mistakes. The full interview outline of this research is given in Appendix 1.

To conduct the interviews, the researcher invited farmers for the interview by sending an e-mail or phone call explaining the purpose of the research. Also, attempts were made to conduct face-to-face interviews in order to maximize the benefits of body language and contextual settings, as noted by (Alvesson, 2003). However, the spread of Coronavirus and the preservation of social distance had tied the researcher's hand and he had to conduct interviews by telephone or/and through online video communication software such as Zoom and Microsoft Teams. Fortunately, the researcher turned this limitation into an opportunity and found the ability to increase the geographical range and diversity of farmers' choices. Regarding the telephone interviews, it should also be noted that the researcher did his best to be able to meet the farmers online and on video, but due to the farmers' busyness on the land, a small number of telephone interviews were conducted. The telephone interview is supported by Opdenakker (2006) as he points out that if the importance of standardizing the interview situation is not necessary, a telephone interview can be a good option. The table below reflects more details of what is being discussed:

Table 1. Conducted interviews (interviews are done from October 16 - November 9)

Case	Farm location	Type of farming	Interview length (minutes)	Years in farming	Interview method
1	Uppland	Conventional	44	30	Microsoft Teams
2	Stockholm	Conventional	50	15	Microsoft Teams
3	Skåne	Conventional	58	9	Zoom
4	Östergötland	Conventional & organic	59	18 & 7	Zoom
5	Östergötland	Organic	53	31	By phone
6	Uppland	Organic	45	39	By phone
7	Uppland	Organic	41	33	Zoom

Regarding the interviews, since the researcher does not speak Swedish – the native language of the respondents – all interviews were conducted in English. In addition, although the interview method and questions in all interviews were the same, but the duration of them varied from 41 to 59 minutes, due to a number of factors. The most important reason was the type of farm BM and the strategies used by farmers. Farmers 3 and 4, for example, had different strategies in how they traded grain and managed their expenses, which took more time to explain. Their transcribed content in Chapter 5 confirms this as well. Also, because the researcher intended to interview the farm owners for more consistency, and in the meantime a few farmers had some challenges in speaking English, the researcher had to repeat and simplify some questions, which led to time variability. In interview 1, the owner was unable to speak English, and his wife did so. Apart from these, in addition to taking notes during the interview, audio and video recording was done with the participant's permission, which allowed the researcher to resolve the ambiguities by repeatedly referring to the recorded items. Moreover, immediately after the interview, the researcher started transcribing the interview so that the underlying and main issues would not be forgotten. The interviewees also agreed to respond to the researcher via email in case of any questions or lack of clarity in the answers.

3.2.3. Data analysis

Zhang & Wildemuth (2009) suggest that a systematic approach should be used to establish the basis for data analysis. In this study, the researcher is following different types of strategies used by farmers about which there is no specific theory. Hence, the researcher tries to generate or reinforce a theory through interaction with data collected in actual research. This, as mentioned before, evokes grounded theory that seeks to discover theory from data (Glaser & Strauss 1967). Of course, it is true that the philosophy of the grounded theory is rooted in structuralism, which differs from the main philosophy of this research, but based on its founders' definitions, this theory can work both as methodology and method (Cho & Lee

2014). In addition, the sampling section explained that the researcher was inspired by this method of data collection.

Grounded theory includes constant comparative method which its basis is on the comparison of evidence for data classification (Freeman, 2005). In other words, each evidence is compared with other evidence to identify similarities and differences and then similarities are grouped together to stimulate the main insight and form a higher-level descriptive concept (*ibid.*). Thus, to get started, two-step process can be performed according to Eisenhardt (1989). First, a within-case analysis of each farm's BM according to the figure 3 will be presented in order to understand how a farmer has managed his/her farm activities. Of course, this method is considered as a deductive coding which is not commonly used in inductive qualitative approaches as Creswell (2012) states. However, this is supported by some authors (Eisenhardt 1989; Zhang & Wildemuth 2009) who argue that using existing categories, easily allows empirical findings to be compared with other studies that are based on the same theory. In the second process, a cross-case analysis will be used to identify similarities and differences in a multiple case study, as noted by Miles & Huberman (1994). This analysis is interesting in that it leads to finding patterns and differences for other items that are in the same settings (*ibid.*). Although as Miles & Huberman (1994) have stated, this process does not provide statistical generalities, but it is an overview of the circumstances in which the findings may occur and in addition to expanding understanding, can also enhance analytical generalization (Glaser & Strauss 1967; Miles & Huberman 1994; Yin 1994). After completing these two steps, a constant comparative analysis will be presented to cover a complete insight of the results.

Data encoding

As Miles *et al.* (2013) argue, research results do not emerge by transcription alone, but by the need to work skillfully to build a compelling story and answer research questions and provide insights that are faithful to the data. The most important tool for turning raw data into a true story is coding (Miles & Huberman 1994). Coding refers to labelling which reduces the volume of practical material, and makes the data ready and available for analysis. Moreover, not only the quality, transparency, and validity of the analysis increases by immersing in the data, but also coding eliminates the asymmetry between researcher and the reader (Miles & Huberman 1994; Cho & Lee 2014; Skjott Linneberg & Korsgaard 2019).

In qualitative researches, codes are traditionally developed directly from data, that is, codes are derived from phrases or terms used by the participants themselves. This approach is often referred to as the inductive approach (Skjott Linneberg & Korsgaard 2019). Another type is deductive coding, which consists of only five to ten codes derived from a theoretical framework (*ibid.*). In practice, a combination

of inductive and deductive coding as a hybrid method is known as the most common approach (Graebner *et al.* 2012). Since the inductive approach is not a linear coding and can use the first and second coding labels, this “abductive” approach allows the researcher to move back and forth between data and rethink (Yin 1989; Eisenhardt 1989; Skjott Linneberg & Korsgaard 2019). In the first stage, descriptive codes and features help to identify differences and similarities, which its logic is a constant comparative logic (Yin 1989; Eisenhardt 1989; Skjott Linneberg & Korsgaard 2019), and the second cycle of coding includes classification, integration, and theory building (Saldaña 2015). Thus, when codes are combined according to similarity and rule, patterns appear that allow researchers to analyze (Skjott Linneberg & Korsgaard 2019).

Qualitative data analysis is done by various computer software including Computer-assisted qualitative data analysis software (CAQDAS), Non-numerical Unstructured Data Indexing Searching and Theorizing (NUD * IST), NVivo, ATLAS.ti, and MAXqda, and N6 (Ose 2016). In addition, many researchers have used Microsoft Word and Excel for qualitative data analysis since this is an easy and useful systematic coding method for researchers and students (*ibid.*). Therefore, for ease of use, the researcher in the present study has used Microsoft Word and Excel to analyze his data (see Appendix 2 for abductive coding and a thematic of the analyzed data).

After analysis, by looking for and describing similarities and differences between cases for each main code, the researcher determined the relationships between data. Also, at the same time, he wrote “research memos” of his spontaneous thoughts on what his cases were showing. Since from the interaction of the collected data, a substantive theory emerges that can be generalized to a more formal and accurate substantive theory (Cho & Lee 2014), the researcher developed key themes and relationships into a theory that referred to “*the knowledge and initiative of farmers in income and cost management.*” The researcher argues that innovation in the income and cost strategies could come from any farmer, as a member of the agricultural sector. That is, how farmers interact with other partners and companies, can lead to the new knowledge, attitudes, and the emergence of new ideas in marketing and sales. In other words, a farmer enters the agri-food sector with a simple model and his specific strategy is absorbed. So, with a farmer’s new way, the approach can be changed.

3.3. Quality criteria

Alvesson (2003) states that qualitative interviews are complex in nature and therefore a great deal of effort is required to interpret their results in order to be able

to apply them to the purpose of the study. Previously mentioned that in this type of research, different methods are used to describe the social realities related to a phenomenon due to its subjectivity. Therefore, quality criteria should be considered in this type of research. To create trustworthiness in a proper qualitative study, four criteria including credibility, transferability, dependability, and confirmability should be paid to (Shenton 2004). Table 2 summarizes what the researcher has done in this regard. Also, in the following, all the details are explained.

Table 2. Criteria for trustworthiness (presented by the researcher)

Criterion	Strategy employed
Credibility	<ul style="list-style-type: none"> - Multiple case studies to detect different work philosophies - Respondent validation: <ul style="list-style-type: none"> • Solving the sources of misinterpretation • Full reflection of the interviewee's opinion • Simplified questions • Prevent deviation from the topic under discussion • Refrain from reinforcing and confirming specific cases - Interviews done only with farm owners - Recorded and transcribed semi-structured interviews - Secondary data used to make a correct comparison
Transferability	<ul style="list-style-type: none"> - Accurate textual explanation - Full description of the choice of the participants: <ul style="list-style-type: none"> • Wider geographical areas • Full coverage of all dimensions required by the samples • Balance in selecting organic and conventional farmers - Coded data to immerse in them and get maximum results
Dependability	<ul style="list-style-type: none"> - Detailed explanation that acts as a tool - Multiple case studies - Recorded and transcribed interviews - Same researcher and methods used
Confirmability	<ul style="list-style-type: none"> - Researcher's reflexivity - The power of single case

Credibility emphasizes the relevance of findings to reality (Shenton 2004). In this study, the researcher focused on multiple case study design, which have allowed him to detect different work philosophies. Moreover, he learned about the farm cases by interviewing the farm owners. Also, to gain an accurate understanding of the farms, he used semi-structured interviews and recoded them so that he could refer to them when necessary. In addition, participants' validation also was used to strengthen the study's credibility. To do so, during the interview process, the researcher tried to make sure that all farmers fully understood and confirmed the reality. Besides, the researcher often asked about specific agricultural terms used by farmers in Swedish culture because they were the source of misinterpretation. The researcher also refused to ask the next question until he was sure that the interviewee had given his/her full opinion to answer the previous question. In addition, the researcher applied maximum simplification in the questions, and when

the questions seemed vague to the farmers, he formulated the questions in a different way. In this regard, the researcher did not use multi-part and challenging questions in the interview as well. Also, considering that the study is focused on the grain sector and some farmers were also active in the fields of livestock and forestry in addition to grain, the researcher tried, during the interview, to prevent farmers from deviating from the grain path. Another important point was that the researcher avoided reinforcing and confirming the specific issues such as governmental obstacles, tax, etc. raised by the farmers so that the interview would not be diverted. Using these methods, the researcher ensured that the interpretation of the research results was exactly relevant to reality. Apart from the above, given that farmers sold their products to agri-food firms and cooperatives, as Eisenhardt (1989) emphasizes, the researcher collected data from other sources such as websites, annual, and sustainability reports of these organizations to make a correct comparison of what they claim to do on the farm level with what a farmer states.

Transferability or external validity says that research findings can also be used in other contexts, conditions, and time (Shenton 2004). To increase transferability, a full description of the choice of the participants along with an accurate method of textual explanation have to be given to readers to understand how the conclusion was reached and under what conditions and assumptions (*ibid.*). These issues are expressed in detail by the researcher in this Chapter, especially in the selection of farmers with wider geographical areas, the full coverage of all dimensions required by the samples, and the balance in the selection of organic and conventional farmers. Most importantly, as noted, the researcher did his best to encode the data to maximize the validity of the research results.

Dependability also as Shenton (2004) mentions, means that this study should obtain similar results if it is conducted again with the same participants. Since multiple case studies have been used in this study and interviews have been recorded and transcribed, it can be said that the data of this study is stable. The purpose of the detailed explanations of the research method in this dissertation is that they can act as a tool and provide the ability to other researchers to replicate easily such studies. Another reason for dependability is that the methods used in this research and the researcher are the same.

The last criteria is confirmability which Shenton (2004, p. 72) explains it as follows: *“steps must be taken to help ensure as far as possible that the work’s findings are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher.”* In this regard, it should be said that according to Lincoln (1995), the researcher’s reflexivity can enter him/her into a state of consciousness in order to understand others. Alvesson (2003) also points out that awareness of how participants, including researcher, affect the study is

important. Although based on confirmability description, reflexivity can question knowledge claims, but Alvesson (2003) mentions to the alternative interpretations of how data is collected through interviews. Since the level of abstraction and loss of motivation, when the number of case studies are not high, can increase, Yin (2013) by introducing the concept of analytical generalization, mentions to the extraction of research results on another level of abstraction. Referring to conceptual abstraction rather than achieving a numerical generalization, Yin (2013) states that by using unique aspects of the study, the results can be generalized to other cases. Flyvbjerg (2006) also points to the underestimation of the power of example, and states that generalization is possible even with a single case. He believes that existing empirical results have a lot to say about other cases with similar features. Based on this perspective, from each case studies of this research, it is possible to understand how a BM can create added value for farmers.

3.4. Ethical and quality assurance issues

Bell *et al.* (2019) outline four important ethical principles in research as follows: The first case is the prevention of various mental and physical injuries, including injuries such as stress, destruction of job prospects, damage to the growth of participants, etc. The second one is the issue of informed consent that the researcher should provide sufficient information to the participants about the study and inform them about the voluntary nature of the interview. The third principle is privacy which the researcher should not violate the privacy of others in the name of research, and the last principle is deception, which refers to incomplete information about the real aim of the study.

In this research, to ensure that the participants are fully aware of the content of the research and to protect the data and confidentiality of all farmers in accordance with the GDPR, farmers' consent was obtained prior to the interview. Also, the researcher provided farmers with a full description of the purpose and research questions via email, as well as at the beginning of the interview, to inform them of their role in the project. With the explanations given, the farmers were able to participate in the interview with informed consent. In addition, for the time the interviews were recorded, the researcher received the farmers' approval at the beginning of the interview, and he guaranteed that the interviewee would remain anonymous. He also assured that the recorded content is only available to him and will be used in connection with the study. Moreover, in this study, farmers could participate in the interview voluntarily and the researcher assured farmers that in the name of the research, their privacy will not be violated and their information will be kept confidential. He also showed his best honesty to ensure that farmers were not deceived about the aim of the research.

4. Empirical background and case descriptions

This chapter begins by a short description of agriculture in Sweden and continues with introducing grain companies and mills. Afterwards, each case study is described separately to give reader an understanding of how a farmer has managed his farm activities.

4.1. Sweden's agriculture

Sweden is the third largest country in the EU by area, with agriculture concentrated in the southern third (Lyddon 2018). According to the World Bank collection of development indicators, Sweden's agricultural land in 2016 was 7.4 percent of the total area, measuring 30,315 square kilometers (Trading Economics 2020). As the Swedish Board of Agriculture states, despite Sweden's northern geographical location, the country has a favorable climate for agriculture, though due to the elongation of the country, the growing season is almost 100 days longer in the southern province of Skåne compared to Norrland in the north (Lyddon 2018). Rural population also accounted for 12.29% of the country's total population in 2019 and most farms are family businesses that combine agriculture with other activities such as forestry (Lyddon 2013; Trading Economics 2020).

4.1.1. Grain section

Sweden is active in grain production and in 2017-18 its production exceeded 5 million tons, among which wheat with a production of about 3 million tons was ranked first (Lyddon 2018). In this country, different types of grains, as shown in Figure 5, are cultivated. As can be seen in this chart, after wheat, barley and oat were Sweden's most important grains in 2019, respectively. In the north part of the country, most crop production includes fodder and coarse grains, while oilseeds and bread grains are mostly grown in the southern lowlands and central Sweden (Lyddon 2013). Overall, the highest yields are in the southern lowlands and the northern farms have the lowest yields per hectare (Lyddon 2018).

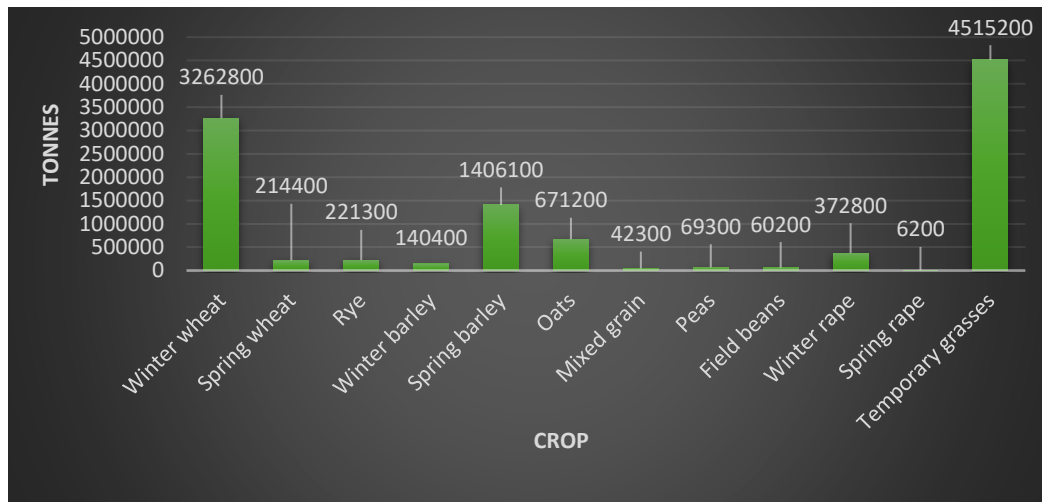


Figure 4. Total grain production of Sweden in 2019 (SCB, 2019)

4.1.2. Swedish grain actors

Sweden is self-sufficient in grain cultivation and milling, and has surplus production for export (Lyddon 2013). Also, its grain sector has a high level of vertical integration from mill to baking to processing (Lyddon 2018). There are 10 large commercial mills in Sweden with an annual capacity of 900,000 tons (wheat equivalent) with a flour production of about 550,000 tons (*ibid.*). According to European Flour Millers 2016 handbook, “*Nordmills owned by the agricultural cooperative Lantmännen⁴, Strängnäs owned by Nordmills/Lantmännen, Lilla Harrie Valskvarn (Farina) owned by Pågen, and Wasabröd owned by Barilla, are recognized as integrated grain companies in Sweden. It has also listed the most important mills in this country as Nordmills, Farina, Barilla, Strängnäs, Abdon Mills, Skåne-möllan, Leksands, Berte and Frebaco*” (*ibid.*). As the European Trade Organization states, at about 30% of the domestic wheat available for flour is processed by these Swedish mills (*ibid.*). In addition, there are many smaller mills that play an undeniable role in Swedish grain processing⁵ (BRÖDPASSION 2020).

In the agri-food SC, many processors are established in the form of cooperatives where farmers operate by joining and investing in them (Hakelius & Hansson 2016). In Sweden, Lantmännen Cooperative is one of the agri-food companies that plays a major role in the country’s grain industry (Lyddon 2018). This cooperative is the Nordic leader in agriculture, machinery, bioenergy and food products with an

⁴ The cooperative had first rank in the field of business to business in 2019 (Sustainable Brand Index 2020).

⁵ Orga Kvarn AB, Teve Kvarn AB, Levene Kvarn, Ångsta Kvarn, Labans Kvarn AB, Limabacka Kvarn AB, Warbro Kvarn AB, Stora Hällsta, Saltå Kvarn, Tuns Elektriska Kvarn / Tommy Johansson, HÄLLA KVARN, Berglunds Bageri, Löve Kvarn, Kumla Kvarn Leif Johansson AB, Stöpafors Kraft HB, Kullenskvarn, LÖGEN 138, VÄRENDIS NÖBBELE, Alboga Kvarn Mjöl & Keramik, Överängs Hembageri & Kvarn, Bo Larsson, Forsane Kvarn & Såg, KVARN, Hävla Kvarn, Assareby Kvarn & Såg KB, HUSEBY GÅRD, Nymölla Bed & Breakfast, Skepparslövs kvarn, Bo på lantgård - Åsgård-Holkestorp, Gissleberga Kvarn AB, Blomsterladan, Nordsjö Kvarn Spännarsvägen 3, Björkaholm Qvarn, AB Kvarnviks Valskvarn.

annual turnover of 50 billion SEK. Also, its grain operation includes areas such as: Agribusiness, Cereal Meals, Unibake, and Viking Malt (Lantmännen Annual Report 2019). This cooperative has about 20,000 farmers and has several districts across the country where farmer members attend in and participate in the cooperative activities (*ibid.*).

The history of this cooperative shows a growth from start point, the local farmers' associations in 1880, which then moved towards industrialization, internationalization, and merger insofar as since 2014 they set a long-term strategy from field to fork to increase their farmers' profits (Lantmännen 2020a; Lantmännen 2020b; Lantmännen 2020c). In addition, 60% of the cooperative's annual profit is reinvested in R&D and innovative activities to address its members' problems (Lantmännen Annual Report 2019). Based on the cooperative's annual survey in 2016, its exchange volume was about 2.9 million tons in the field of buying and selling grains and oilseeds, of which half of this is allocated to the cooperative's own industries. Lantmännen also exports grain to France and the Baltic region due to their lower level of harvests than usual. This cooperative's main markets are the export of wheat grains to the Mediterranean, malting barley to Germany and the Benelux countries, and oats to Germany, the Benelux, and the United States (Lyddon 2018).

As it is stated by the cooperative, grains were their third crop in 2019, and its amount has been 12 percent higher than the average harvest in the past five years, due to its cost-effectiveness and efficiency program implemented throughout the year (Lantmännen Annual Report 2019). Moreover, in order to meet the food needs according to the population rate, this cooperative in the field of sustainable food production, including plant protein, with regard to increasing consumer interest and creating value-added opportunities in the food chain and increasing farm incomes, has started serious activities since 2016 (Lyddon 2018). The cooperative also is so active in sustainability issues and is ranked as number six by Sustainable Brand Index™⁶ in 2020.

⁶ Trademark

4.2. Case studies

In this section, case studies conducted by the researcher are introduced. Also, in order to create a general picture of the farmers' activities, all farms' BMs are reflected in Appendix 3, respectively.

4.2.1. Case number 1

The farm in question is a family farm located in Uppland, with a total area of 2250 hectares, 1250 hectares of which are dedicated to the grain production. In this farm, agriculture is done in conventional way and the farmer pursues the activity of bulk production. As the farmer notes, he sends about 10 trucks of grain to the cooperative daily during the harvest season and, therefore, he must produce with maximum quality in order to have the highest income.

One particular type of farmer's contract with Lantmännen is "climate concept" that applies to spring wheat. Birds' habitat conservation, preventing the entry of nitrogen into waterways, and using compounds in the tank of agricultural machinery in order to reduce the negative effects on the environment are of those. He says that *"we get paid for implementing climate concepts, otherwise we will not implement any of them."*

In general, the farmer believes that this cooperative, unlike small companies, has the ability to take care of all his products, and this is of great value to him. Training courses held by the cooperative and their advice have helped the farmer to earn more money and produce a special type of oat for allergic people as well.

4.2.2. Case number 2

The farm in question is a family farm located in Stockholm, with a total area of 400 hectares arable lands. In this farm, agriculture is done in conventional way and the farmer is a bulk producer. As the farmer states, there is a weak tendency for agriculture in the area under his activity and he sells almost all of his products to Lantmännen to be exported.

As a member of the cooperative, the farmer works under pre-determined contracts, such as the delivery of high quality products or specific volumes or sometimes production based on biodiversity protection and lower carbon emissions. He says *"although I do not always get the expected price from the cooperative, they are reliable and have helped me to market and generate a surplus. I think cooperative offers good seasonal opportunities that a farmer alone cannot produce."*

As the farmer points out, Lantmännen provides fertilizer and seeds for farmers, advises farmers on the production of certain crops, helps with land evacuation and storage, offers financial solutions, and buys farmers' products at market price, even when the market price is low.

4.2.3. Case number 3

The farm in question is a sister company with a pig farm located in Skåne, with a total area of 340 hectares, 240 hectares of which are dedicated to grain and vegetable production. In this farm, agriculture is done in a conventional way and the farmer's activity is only in the field of care and maintenance of crops, means his planting and harvesting services are through contracts with contractors.

Prior to farming, he has worked for Lantmännen and this useful experience taught him how to trade. Hence, he sells his products in the months when the price is high. For example, in October and November, he pre-sells one-third of next year's wheat and again another third in April and May. He also sells the final and freshly harvested third in October and November due to the high price, and to complete this cycle immediately pre-sells next year's products. The farmer has various deals with Lantmännen, a friend who is a grain exporter, and a small cooperative, with a few members, called Lokal Föreningen. He says *"the reason of my dealings with different buyers is that the market value for me is more than any other type of contract with companies."*

The farmer believes that Lantmännen's free government-funded courses are useful in the growth of his products. In addition, he praises the cooperative incentive system and its role in connecting farmers. Evaluating the climate concepts of cooperative positively, he believes that *"These concepts can only lead to sustainability with the full financial support of the government."*

4.2.4. Case number 4

The farm in question is a family farm located in Östergötland. This farm is consisted of two separate plots of land in two parts of Linköping. The total area is 190 hectares, so that in one land of 120 hectares, conventional farming and in another land of 70 hectares, organic farming are done.

The farmer works at the University of Agriculture, and hence, he knows the end consumer expectations well. Also he has a network of colleagues who tell him when to sell and when to grow a profitable crop. He also has deals with different

companies. As the farmer states, Forsbecks AB⁷ as a private and important buyer in the region and with more flexibility than large buyers receives the majority of his organic products. He also sells most of his conventional crops to Lantmännen and notes that Lantmännen gives good advice to farmers, especially lately on protein products. In addition, the farmer admires the cooperative's "storage deal" given that he is suffering from the lack of storage.

Apart from that, the farmer has deals with his neighbours and other farmers, and says *"none of my clients can take me for granted, because my strategy is to work with all of them."*

4.2.5. Case number 5

The farm in question is a family and organic farm located in Östergötland, with a total area of 108 hectares plus 45 hectares rented from a neighboring farm, of which 100 hectares belong to the grain production.

The farmer works with Saltå Kvarn⁸, and also has some deals with various farmers. As she states, this company is a reliable partner and buys products above market prices. In addition, the company through a toolkit makes points for farmers' environmental activities such as planting trees, using renewable fuels, etc. so that farmers have a better income per kilo of delivered crop.

She praises some government assistance in her livestock sector and the installation of solar panels. However, since it has taken her almost 15 years to get a good harvest in the grain sector, she is very concerned about the declining trend in government support which has happened constantly in recent years. As she says, *"these reductions can definitely stop her business."*

One of the farmer's capabilities on land, is the use of a planting machine called "Cameleon". Using this machine, she has been able to reduce many of her land's soil related issues such as weeds and thistles.

⁷ Forsbecks AB is a family business founded in 1896. Its business concept is to be a local business partner with full scope for agriculture. The company has 35 employees and is headquartered in Skänninge, Östergötland. Forsbecks AB sells about 100,000 tons of grain annually for end use in food and for the biofuels industry. Its annual production also is about 20,000 tons of seeds and grains (Forsbecks AB 2020).

⁸ Saltå Kvarn is a producer of organic grains owned by a number of foundations that support the anthropology movement and anthropology-inspired activities (Jonsson 2017; Saltå Kvarn 2020). The company was founded in 1964 in Järna, south of Stockholm, and is the oldest organic bread bakery in Sweden (Ghosh & Eriksson 2019). Their method is based on natural products, with high quality and minimal environmental impact and hence, no farms are allowed to use fertilizers or chemical pesticides (Saltå Kvarn 2020). The company is in the category of SMEs (Jonsson 2017) and is ranked as number nine by Sustainable Brand Index™ in 2020.

4.2.6. Case number 6

The farm in question is a family farm located in Uppland, with a total area of 750 hectares, 16 hectares of which are dedicated to grain production. In this farm, agriculture is done in an organic way and so, the farmer does not use chemical fertilizers.

The farmer sales strategy is based on the higher price he receives, but as a member of Lantmännen, he mostly sells his crops to this cooperative. He points out that Lantmännen has a market price list for organic products and based on, pays to farmers after signing the contract and commitment. As the farmer notes, the cooperative tries to support farmers in various ways by contacting them and providing free information. In addition, he admires the cooperative providing signals about planting a particular crop at a specific time due to the high prices at harvest period.

However, referring to the high costs of organic farming and soil-related problems, the farmer believes that he does not see a significant difference in the price of his crops compared to conventional ones. Moreover, although he receives little financial support from the EU in his cattle sector, he says *“moving towards sustainability programs is possible only with government financial support.”*

4.2.7. Case number 7

The farm in question is a family farm located in Uppland, with total area of 227 hectares, 30 hectares of which are dedicated to grain production. In this farm, since the farmer is very interested in preserving the environment, farming is done organically. As a member of Lantmännen, the farmer mostly sells his crops to this cooperative, but in a smaller scale to Saltå Kvarn.

According to the farmer, both companies use incentive system to pay the extra price per kilo in exchange for receiving more quantity, and to do this, they hold meetings and training programs for farmers to improve their production volume. Also, at certain times, due to the high price of certain grains in the market, the companies ask him to focus on them.

Referring to the stability of his income, the farmer points to his lowest share of income in the grain sector compared to his other activities. He notes that standards and certifications are becoming more stringent year by year, and he needs government financial support to maintain the sustainability of his activities. He points out that *“the lack of government support and the strictness of buyer’s laws have decreased the number of farmers in the area from 15 to 2 over the years.”*

5. Analysis and results

In this chapter, as mentioned before, cross-case analysis has been performed. Therefore, the researcher by presenting tables, has reflected the differences and similarities of the farm activities, the farmers' cost and income strategies as well as their challenges and satisfaction with the value chain. Then, the constant comparative analysis done at the end of this chapter in order to provide a strong insight and understanding of the overall concept at a higher level.

5.1. Farms' characteristics

Farm general description is the first step in getting to know their characteristics. The following table reflects the differences and similarities of each farm separately:

Table 3. Farm characteristics

Case	Location	Farm type	Experience	Grain area	Farming	Types of grains under cultivation	Animal section
1	Uppland	Family farm	30 years	1250 hectares	Conventional	Wheat, oat, pea, rapeseed, barley	
2	Stockholm	Family farm	15 years	400 hectares	Conventional	Winter wheat, oats, barley, forage	
3	Skåne	Sister company with a pig farm	9 years	240 hectares	Conventional	Winter & spring wheat, oat, spring barley, pea, rapeseed, silage, hay, grass seed for soccer fields	
4	Östergötland	Family farm	18 years in conventional and 7 years in organic	120 hectares (conventional) and 70 hectares (organic)	Conventional and organic on 2 separate lands	Both farms: Spring & autumn wheat, barley, oats, rapeseed, bean, pea Alfalfa (makes up 20% of the organic farmland)	
5	Östergötland	Family farm	31 years	100 hectares	Organic	Autumn wheat, bean, oat, grass, clover	Beef cattle
6	Uppland	Family farm	39 years	16 hectares	Organic	Barley, oat, mixed rye-wheat, grass	Beef cattle
7	Uppland	Family farm	33 years	30 hectares	Organic	Wheat, barley, bean, pea, oat, rye, grass, clover	Dairy cows, sheep, and hen

As the Table 4 shows, the farms are located in the south and east part of Sweden and are run by families. In the meantime, only one farm was partnered with a pig farm in order to make better use of equipment. Farmers' experience varied widely, but the younger ones had excellent experiences including working at an agricultural

university as well as previous skills in the agricultural trade. For instance, the farmer number 3, with the least experience in years of activity, not only was shared the equipment by partnering with his neighbor's farm, but also had increased the efficiency of his decisions through daily synergistic meetings with him.

The lands of the grain sector also varied greatly from 16 to 1250 hectares. The differences is that all the farmers who were working on lands up to 100 hectares, had organic farming. Conventional farmers were following bulk production on their farm as well. The crops under cultivation also varied according to the type of cooperation of farmers with companies and the conditions of the region, but in the meantime, wheat was the main crop and grains such as barley, oats, legumes, and rapeseed were the main supplementary ones.

5.2. Farms' activities and deals

As the Table 4 reflects, the most activities of farmers on the grain section were sowing, harvesting, drying, and storing grains for delivery to their customers. Only farmer number 3 was not engaged in planting and harvesting, since he was just focused on crop maintenance. In other words, it was the contractors who, through the contract, carried out these processes on his farm. Other side activities such as making hay and silage for animals, working with other farmers, and even cooperation with agricultural consulting companies have also been reported.

Table 4. Farmer's main activities and grain deals

Case	Farm activities	Customers
1	Sow, harvest, dry, and store	Lantmännen (main), Swedish Agro ⁹ AB (some deals on barley)
2	Sow, harvest, dry, and store	Lantmännen (main), A few deals with some farmers
3	Care and maintenance of crops	Grain exporter (his friend), Lantmännen (sometimes), Lokal Föreningen (some deals)
4	Sow, harvest, dry, and store (only organic crops were stored due to the lack of storage in another land)	Forsbecks AB (most organic), Lantmännen (most conventional), Rapeseed and some conventional crops to Lovanggruppen ¹⁰ , A few trades with some other farmers
5	Sow, harvest, dry, and store	Saltå Kvarn (wheat and oat), Bean to other farmers
6	Sow and harvest	Lantmännen (main), Svenska Foder ¹¹ , Some other mills
7	Sow, harvest, and dry	Lantmännen (main), Saltå Kvarn (smaller scale)

⁹ Swedish Agro AB is part of the Danish Agro (international agricultural group), founded in 2011. The company's main business includes fodder, cultivation of plants and grains. Swedish Agro is headquartered in Kalmar, where they own one of the most modern feed factories in Europe (Swedish Agro AB 2020).

¹⁰ A company located in Linköping engaged in agricultural activities. They started in 1988 and now has 3 employees and 153 shareholders. Lovanggruppen's turnover in recent years has been between SEK 100 and SEK 130 million (Lovanggruppen 2020).

¹¹ Svenska Foder is a supplier of food and agricultural products and its main focus is to be a manufacturer and wholesaler with a well-developed distribution and sales network close with retailers. The company also buys grains from Swedish farmers and sell them to factories, breweries, distilleries, and as an export product. The group is headquartered in Lidköping and has 329 employees (Svenska Foder 2020).

Based on the table above, with the exception of one organic farmer who sold her crops only to Saltå Kvarn, Lantmännen was the common customer and almost all farmers more or less sold their grains to this cooperative. Transactions with the cooperative were also conducted under various contracts, including specified quantities and high-quality production, as well as the implementation of climate concept programs. Besides, depending on the type of area where farmers operate, the presence and absence of competitors, the type of agriculture, and the price of crops, they had deals with different companies, grain traders, and other farmers.

5.2.1. Buyers' characteristics

Since Lantmännen is a major joint venture between almost all farmers, this section explains the cooperative's characteristics. In the following, Saltå Kvarn also is described.

From the farmers' point of view, Lantmännen is a reliable partner and no company is comparable to Lantmännen in terms of scale and cost management. The cooperative helps farmers with surplus marketing and production, and offers good seasonal opportunities that a farmer alone cannot produce. The cooperative also buys farmers' products at market prices and is known as a buyer who is always on the scene to buy their products. In addition, Lantmännen provides signals to farmers to plant a particular crop at a certain time to get higher income. Besides, the cooperative is active in providing seeds and fertilizers to farmers and connect farmers to each other through district meetings.

There are also training courses offered by Lantmännen, some of which are government-sponsored for free, and advice on how to increase production volume and more recently, on protein ones. These programs are justified by welcoming farmers, especially when they are in line with the cooperative demand. Moreover, the cooperative incentive system in exchange for overpayment per kilo is admired by bulk producers since it helps them earn more money. Most importantly, cooperative "storage deals" are valued by farmers because they provide a good opportunity for farmers to store their crops in the cooperative and sell them at a higher price in winter.

Furthermore, as farmers have stated, the cooperative implements wheat climate concept, a kind of contract done in response to the environmental concerns. One of the terms of this contract is the use of compounds in the fuel tank of agricultural machinery in order to reduce the negative effects on the environment. Leaving a space of about 5 to 6 meters per hectare of wheat land for birds to hatch and find food is the other term. As it is pointed out by farmers, this is done to protect biodiversity. Covering about 20 meters on each side of the land with grass instead of planting grains to prevent nitrogen from entering the waterways, is also another item of this contract.

Apart from Lantmännen, a major buyer of one of the farmers was Saltå Kvarn. According to that farmer, this company is a trustworthy partner and she gets along well with it. The company buys the farmer's products above the market price, and her level of satisfaction with the company is such that she has changed her type of farming from biodynamic to organic when the company decided to change its strategy. As the farmer points out, Saltå Kvarn holds annual meetings where farmers meet and share their ideas for growing specific crops. In addition, the company has a toolbox where farmers can optionally engage in environmental activities such as using renewable fuels, planting trees, expanding green areas, using solar panels etc. in accordance with the company's instructions, and receive more money per kilo for product delivery than earned points.

5.3. Farmers' cost strategies

The major costs associated with the farms were fuel, employee's salaries, machine repairs, purchase of fertilizer (only among conventional farmers), and seeds. Table 5 shows the farmers' cost management strategies separately.

Table 5. Farmer's different cost strategies in the grain sector

Case	Fuel strategy	Machinery strategy	Fertilizer strategy	Salary strategy	Energy strategy	Seed strategy
1		Attempts to sell less active machines due to the high cost of repairs		Seasonal employees (6-7 in harvest time and 2-3 in winter)	Solar panels (15% of farm total energy)	
2		Keep less new equipment and a lower level of capital budget to them		Fewer but highly skilled employees	Solar panels and a bio power plant (all farm heating energy)	
3	Annual purchase due to price reduction during Corona	Lack of ownership of machinery and contract with contractors	Annual purchase with low interest bank loan	Seasonal employees	Placement of low-speed fans in storages to reduce energy consumption	
4		Purchasing second-hand and old equipment in accordance with the environment and technology	Annual purchase by taking a bank loan (sometimes in June and July from Lantmännen)	Seasonal employees		
5		Use new and efficient equipment to reduce costs such as "Cameleon"		Rotational employees	Solar panels (all energy throughout the year)	Growing wheat and oat seeds
6					Solar panels (a few energy)	
7		Ability and skill to repair machines			Solar panels (to dry grains)	

According to the Table 5, the cost of machine repairs has somehow affected all farmers because, as can be seen, there is a tendency among farmers to maintain less equipment or buy second-hand ones. In the meantime, one of the farmers had reduced his expenses in this field by gaining personal skills in repairs instead of

paying repair services. The use of new and up-to-date machinery according to the exact needs of the farmer, as shown in case 5, was very effective. However, it can be said that “not owning” machinery is the most unique strategy that can be more generalized among other farms. According to the farmer number 3, the machines are used intermittently on many farms and their costs are on the contractors.

In addition, using fewer but more experienced employees and even using a rotating system to employ employees in other sectors such as livestock has helped farmers reduce costs. Moreover, as farmer number 3 has pointed out, buying fuel and fertilizer annually at a time when prices are at a minimum, has been able him to save a large share of an employee’s annual salary. This strategy can be helpful for farmers who use expensive renewable fuels as well.

5.4. Farmers’ income strategies

In relation to the farmers’ income management in the grain sector, each farmer followed his own work philosophy depending on his farm and area conditions. Table 6 gives a complete comparison of the strategies used by each farmer and the reason for their choices.

Table 6. Farmer’s different income strategies in the grain sector

Case	Income Strategies	Reason for choosing
1	Most crops go to Lantmännen under different contracts	Lantmännen is able to take care of all products
2	Almost all crops go to Lantmännen, for export, under contracts	It is easy to deal with Lantmännen Agricultural trend is weak in the region
3	Not sales of more than 70% of products before winter	Guaranteed to have a certain amount of product (if winter went cold)
	Pre-sale of grains in 3 stages and out of the harvest time	Definitive sales once a year do not generate revenue because prices fall during the harvest season
	Deal with grain export trader	Offers a reasonable price without the need for drying
	Set a price threshold	Because he is able to find other buyers
	Deals with Lantmännen and Lokal Föreningen according to the contract	When they offer reasonable price
4	Sell to different buyers due to the connection with a large number of them	Based on services they offer such as easy deal, open to deliver, best drying rate, take care of grains
	Not selling the entire product portfolio to one buyer	It leads to less income
	Rotational sales to different buyers	Not selling to buyers 2 or 3 times in a row is equal to not returning them to buy
5	Sales of most crops to Saltå Kvarn under contract	Easy to deal with this company
6	Sell at the highest price found	To get higher income
	Sell to Lantmännen under contract	Because sometimes it is hard to find another buyers
7	Sales of most crops to Lantmännen	Due to lack of another buyers in the area

According to the Table 6, farmers have used different methods to deal with their customers, depending on the area of activity, type of product, storage space and the services offered by buyers. The most common strategy is to work with Lantmännen on a contract basis. Apart from this, farmer number 3 was able to maintain his target price threshold through direct sales of products to his businessman friend or through pre-sales to companies in 3 stages and at times when prices are high. As that farmer noted, *“He has gained this experience from several years of work at Lantmännen.”* This strategy can be generalized to farmers who have more access to buyer channels. Also, keep selling the entire basket to one buyer leads to lower income as farmer number 4 has pointed out. Instead, he trades with his buyers periodically to cover his entire customer network and keep his price threshold high.

5.5. Farmers’ problems and challenges

Farmers’ challenges and problems were in a variety of areas. On land, the most important issue was for organic farmers and soil related problems such as weeds and thistles. But off-farm, according to the Table 7, major problems were related to the bureaucracy and government regulations, along with pressures to carry out environmental activities under CAP¹² and KRAV¹³ laws.

In the case of Lantmännen also, the lack of support for niche production and mere attention to production volume, the lack of cooperative flexibility in purchasing organic products, and the lack of freedom of the farmers after signing the contract were among the important issues. Moreover, the need for precision farming which can help farmers to distribute the right level of nitrogen into the soil as well as more focus on protein grains are emphasized.

¹² Sweden is a member of the EU and its agricultural policy is part of a Common Agricultural Policy (CAP) and it is a priority for the Swedish Farmers’ Federation (Lyddon 2013).

¹³ A label for organic food (KRAV brand food is the most stable food and is produced without synthetic chemical pesticides and fertilizers). The KRAV label has grown from an active interest in protecting nature, people, animals, and the future as well as with the aim of contributing to sustainable production to produce high quality food. KRAV is the Sweden’s most popular environmental food label, and 98% of all consumers are familiar with it (KRAV 2020).

Table 7. Farmer's challenges and problems

Case	problems related to Lantmännen	Problems with environmental programs
1	Does not have some technology services and we get advice from elsewhere.	
2	Is not much active in the field of protein legumes (beans and peas should be more requested due to the Swedes' interest). Cannot provide the farmer with an accurate market reaction. There are 1,500 members in one district and opinions are very different.	CAP policies and government laws are strict and time-consuming. Climate concept contracts and sustainability programs should not be borne by farmers.
3	Contracts affect prices (farmers get paid less if the seeds do not dry out). Contracts and commitment reduce farmers' freedom and discretion. Follows market price which sometimes is very low. Should provide satellite support for product density and proper nitrogen distribution. Training on how to use new machinery is needed.	Lack of financial support to implement climate concept and environmental programs. The farmer says <i>"I have to pay extra SEK 60,000 a year to buy renewable fuel, and I will start today if government supports"</i>
4	Except in protein legumes, is unable to help improve product quality and the farmer receives advice from consulting firms or EU training classes. Its climate concept cannot be implemented in the harvest season and in the bulk production. Has tendency to bulk production and do not support niche market. Is not flexible in buying organic products. Should provide precision farming to help distributing the proper level of nitrogen. Should provide a tracking system so that the farmer knows what he is receiving from the SC. The farmer needs financial support to buy agricultural machinery.	Unnecessary paperwork in the implementation of environmental policies, the high costs of KRAV rules, and the need for government funding for sustainability programs are emphasized by the farmer. He states that <i>"the only way I can be a pioneer in sustainability is through government support."</i>
5		High tax, bureaucracy, reduction of loans, high costs of government training courses, strict KRAV regulations (which are time-consuming and control the farmer), and the reduction of government support in recent years, are the farmer's concerns.
6		Government bureaucracy, tax increase, and pressures to address environmental activities without support in the grain section are emphasized by the farmer.
7	Stringent contracts to deliver high production volumes have in some cases forced the farmer to buy expensive grain from other farmers to load the cooperative truck. The cooperative is reluctant to buy some products. Training sessions are insufficient in increasing product quality. Strict co-operation laws and compliance of large farmers with the cooperative are driving small farmers out of business.	KRAV rules are getting tough day by day and the farmer needs support to implement environmental programs.

5.5.1. Lantmännen's merits and drawbacks

As shown in the previous section, in addition to the benefits, farmers had problems with the cooperative. Therefore, a comparison is made in this regard and its results are reflected in Table 8.

Table 8. Lantmännen's main merits and drawbacks

Merits	Drawbacks
Is a reliable partner and no company is comparable to them. Buys farmers' crops at market price and always is there to buy. Helps farmers to have surplus (hold courses and trainings) and offers good seasonal opportunities that a farmer alone cannot produce. Has "storage deals" which is a merit for farmers (who suffer from the lack of storage) to sell their grains at a higher price in winter. Has incentive systems for surplus production and quality. Provides signals to farmers to plant a particular crop at a specific time to sell at a higher price at harvest time. Provides seeds and fertilizers for farmers.	Has strict contracts which restrict farmers' freedom. Somehow is unable to improve product quality. Is not much active in the field of protein legumes which is a good source of income for farmers. Is not flexible in buying organic products and has less tendency to niche market. For implementing its climate concept, farmers need full financial support. Does not offer some technology services such as EU applications. Farmers need precision farming and a crop tracking system.

5.6. Farmers' satisfaction of the grain chain value

Table 9 below, reflects the farmers' opinions about their share and satisfaction of the grain value chain. It also reflects their other sources of incomes.

Table 9. Income satisfaction and fare share in the grain value chain

Case	Share of the grain value chain	Income satisfaction	Other sources of income
1	The farmer believes that he receives a fair share of the value chain	50% of the farmer's total income comes from grain (has a net profit of 35-40% of grains and is satisfied with it).	25% of his total income is from renting out buildings and garages and the rest total comes from his forest section.
2	The farmer believes that the value of products remains in retail chains. He notes that his share will increase if the cooperative focuses on protein grains.	The farmer reaches a new production record each year but does not receive the expected revenue (although he is satisfied with his relationship with the cooperative).	Renting out business offices and houses, and selling a small amount of timber are the other sources of the farmer's income.
3	The farmer believes that money does not go back to Lantmännen from retail chains to be distributed among farmers. He points out that inflation in machinery and fuel prices are high unlike grain, which means that we have an unfair chain.	The farmer only uses grains to fill the gap of his vegetables. He said: "Each hectare gives me 10 tons of wheat with a gross profit of 18,000 SEK and the same hectare gives me 15 tons of potato with a gross profit of 100,000 SEK. Can I be satisfied with this?"	Vegetables alone make up about 70% of the farmer's total income and the rest comes from grains.
4	What the consumer pays for his quality grains, does not come back to him (believes that he does not even receive a signal from the value chain). Retail chains control most of the food markets in Sweden.	The farmer believes that in Sweden the price of conventional crops such as wheat is 0.20-0.25 SEK per kilo less than central European countries. He also says that Danish and German organic farmers receive 0.80 SEK per kilo more than Swedish farmers.	50% of the farmer's total income comes from the grain sector, and the rest comes from working at an Agricultural University, consulting and other activities.
5	The farmer believes that prices are at retail and the commercial price of grain has not changed significantly for many years. (KRAV has not been known so much to persuade people to pay).	The price difference of organic products is smaller than the farmer's expectations although organic farming has more costs. She just wants to be in this sector due to her previous hard works.	Bed & Breakfast services in summer and selling meat from the livestock sector are her other sources of income.
6	The cooperative does not have enough power to return prices to farmers. Referring to the meat sector, the farmer expressed his satisfaction with the direct sale of meat boxes to customers, but believes that in the grain sector, retail chains take the main share of the chain.	Organic farming has not significantly increased the farmer's income, but he will be forced to leave if he does not continue working.	Renting out houses to people, selling timber from the forest sector, and selling meat are his other sources of income.
7	The cost of organic farming is high and the value of his products has remained in retail chains.	The farmer cannot survive on the income of the grain sector and grain constitutes the lowest share of his income (the price difference of organic products is very small).	Renting out 130 hectares of his farmland, income from dairy cows, and a few direct sale of food to customers.

As it is stated by farmers, they cannot survive on the grain sector, as at best only 50% of their total income came from it. In fact, it is the forest, livestock, vegetables and rental buildings that have covered their livelihoods. According to the table, with the exception of a large bulk producer, the rest were dissatisfied with their income level in the grain sector. Higher grain prices in neighboring countries, no significant price difference between organic and conventional products, high costs of organic farming and KRAV anonymity to persuade consumers to pay more, the lack of significant changes in the commercial price of grains over the years, and most importantly, the high power of retailers in reaping the chain profit were the most important issues that the farmers mentioned. They also believed that grain companies, especially Lantmännen, cannot compete with retail chains in order to take and distribute a fair share among them.

5.7. Synthesis of the analyses

In this section, the researcher has constantly compared the cross-case analyses to provide a higher understanding of the story. Therefore, by combining the relevant but less mentioned issues, the researcher has made overall results.

According to the farmers, the cooperative work philosophy is based on production volume rather than quality. Their training courses also confirm this claim, as the farmers have turned to other companies to get quality advice. Since the philosophy of conventional farmers is based on bulk production, they could be more compatible with Lantmännen's guidelines. One organic farmer noted that to fulfill his commitment to the cooperative's contract and in order to deliver a certain amount of produce, sometimes had to buy grains at a higher price from other farms.

The cooperative's wheat climate concept is not implementable in the harvest seasons according to the farmers. It means that this is mostly done on the smaller volumes. Although this concept is connected to the EU in response to the climate concerns, the results showed scattered support for farmers' compensation. In fact, only one farmer expressed that he is fully compensated for this.

Unlike the cooperative, Saltå Kvarn buys organic products above market prices. This kind of flexibility has been seen not only in the case of this company, but also by another private buyer, Forsbecks AB. It was explicitly stated by one farmer that the cooperative does not have much flexibility in buying organic produce due to its structure and regulations. Even though that farmer was active in both types of farming and sold his conventional products to Lantmännen, he had very few deals with this cooperative about his organic products due to its rules for drying grains and delivering them to the mill that they want, especially in the harvest seasons and when prices are low. Given this, and considering that other organic farmers were somehow forced to sell to the cooperative due to the lack of other buyers in their area, it can be concluded that smaller companies are a better option for trading with niche producers because of their greater flexibility.

Another important issue was the inability of the cooperative to compete with the powerful retail chains in Sweden. Given that the cooperative could not get more shares for farmers from these retail chains, farmers emphasized that Lantmännen have to focus more on protein legumes. According to the farmers, legumes are a better source of income than traditional grains. Farmers also pointed out that the cooperative in the field of precision farming should further assist them in distributing the right level of nitrogen to the crop to increase their productivity.

Finally, the high cost of implementing environmental programs was highly emphasized by farmers. In this regard, they agreed that the only way to be pioneer in addressing environmental sustainability issues is having full government financial support.

6. Discussion

Using the theories presented earlier, this chapter theoretically discusses the results. To do so, first of all, the researcher provides an overview of what he has learned from the farm BMs, BMIs, and share of SC value. In the following also, 3 main research questions will be discussed respectively.

6.1. Theoretical implication of the results

According to the results, it can be said that the farmers have often synchronized their BM by finding additional market channels that offer better prices. Also, as far as the farmers develop their BM in the SC of Lantmännen, it seems that they are either looking for cost-cutting developments, or feel that there is no value-added compensation for their production. This shows that the cooperative has a better power and position for the farmers because it leads to a more appropriate share of the SC. Thus, the philosophy of agricultural cooperatives, as noted by Valentinov (2007), has been implemented correctly by Lantmännen. This cooperative is formed to increase the power of farmers against large retailers, but despite the global market for grains and related products, as farmers have noted, even Lantmännen's power over retailers is limited. However, they have created a strong position of power over farmers. This is the same discussion of governance structure proposed by Maloni & Benton (2000). This also refers to the Lantmännen's SCM performance which according to Crook & Combs (2007), can lead to the financial recovery of chain actors. As they state, when an organization has control over resources that few companies may have control of, therefore, that organization's bargaining power can ensure the stability of enterprises by establishing long-term relationships, and keep them away from hostile environments. It is explicitly stated by farmers that the cooperative is a reliable partner and buys products at market prices. Besides, offering seasonal opportunities, providing seeds and fertilizers to farmers, advising on how to increase production, incentive systems for overpayments, and having storage deals are services that have made Lantmännen a powerful player who can keep farmers away from the external threats.

Lantmännen also holds meetings which has been strengthened the communication network between farmers. This is the concept of netchain as expressed by Lazzarini

et al. (2001). That is, the cooperative has developed all the vertical and horizontal communications in the chain. In this regard, Beske & Seuring (2014) note that the interaction of actors assures long-term relationships which leads to cost reduction and increased competitive advantage. Since through Lantmännen's meetings farmers are learned to increase their product quantity, it means that the cooperative could provide value added activities. This value creation demonstrates the efficiency of the Lantmännen SCM.

Lantmännen's storage deal is also another way to guarantee the farmers' long-term relationships since it provides added value. This storage deal has reduced the farmer's risk of not being forced to sell grains at a low price and instead, helps them to increase their revenue. In this regard, Chopra & Meindl (2016) state that this is the SCM that can maximize SC surplus and create customer value.

Besides, as mentioned, the cooperative buys products at market prices and is always there to buy. According to Beske & Seuring (2014), adapting to sudden external changes shows a company's dynamic capability. Since Lantmännen has the ability to buy products at market prices and largely control market turmoil, its supply chain has a high dynamic capability.

Lantmännen's incentive system has also been able to motivate bulk producers to produce more in order to capture more value. It is stated by Lazzarini *et al.* (2001) that incentives reduce asymmetries and different interests in the chain that could lead to opportunistic behaviors in transactions. Although there were farmers who could gain more added value through other sales channels, but this is an opportunistic behavior, because the actor in power has used this opportunity for his own benefit. Thus, it is not surprising that the cooperative's contracts should limit freedom of action. The cooperative has a standard BM based on the philosophy of collective action. This means that they pursue a common goal for all farmers. This is supported by Beske & Seuring (2014) as they state that setting a common goal leads to the long-term relationships, reducing costs, and increasing competitive advantage.

6.2. Answers to the research questions

This section discusses the three main research questions mentioned in the Chapter 1 respectively and answers them with the help of existing theories.

6.2.1. Farmers' adaptation to SC opportunities

As the results shows, farmers deals with buyers in different ways and in order to gain better value. Therefore, their customers range from Lantmännen to private companies due to their kind of crops and the presence of different buyers in their

region. They also interact with companies to get advice on improving the quality of their crops, receive services related to the agricultural machinery, and also services related to the EU application. These multilateral relations have been seen almost among all farmers. As mentioned in the previous section, this is the concept of the netchain (Lazzarini *et al.* 2001), but this time in the farmers' own BM. Thanks to this, many farmers were able to capture more value by having different buyer channels and not selling their entire basket to one buyer. This shows that farmers sometimes could find better prices than Lantmännen. Of course, the farmers with larger arable lands could produce more crops and make more profit, and hence, they were more committed to the cooperative. In this regard, Fischer & Qaim (2014) point out that members' commitment to an organization can be different because their benefits and costs are not the same.

Meanwhile, a young farmer was able to create a competitive advantage by using practical and innovative methods. Focusing solely on crops' service and maintenance are of those. In other words, the farmer through the practical results of sharing equipment with a neighboring farm, had come to the conclusion that handing over the planting and harvesting process to contractors and not owning machinery and the costs associated with repairing them, could lead to efficient and low-cost agriculture. The other innovative method was three-stage pre-sale plan, which that farmer had gained this practical experience by working in Lantmännen. In other words, he was able to achieve a degree of desirability by simulating what he had learned.

Casadesus-Masanell & Ricart (2010) refer to all these deviations as deregulation from the standard BM. This means that the farmers have not followed the cooperative's standard BM. Instead, they have been able to identify new ways to capture more value. These innovations have been observed among all farmers to the extent that they could have been able to find other channels for sale. Fischer & Qaim (2014) support this and stress that this is the previous benefits that effect on the intensity of collective participation. It means that farmers were sometimes dissatisfied with their share of the chain and did not want to contribute to the philosophy of the collective action.

6.2.2. Impact of changes in BM on farmers' share of chain value

According to the results, full expectations of the farmers' share of the chain value are not met. Meanwhile, organic farmers, considering the high cost of their farming and due to the lack of tangible price differences in their crops, were more unsatisfied. Since almost half or more than half of the farmers' total income came from other sources, it means that they could not survive in the business by relying

solely on grains. That is why they followed different channels in order to earn more money. As a result, Lantmännen BM sometimes has failed to motivate many of them to cooperate since their expectations are not met. Öhlmér *et al.* (1998) point that farmers' needs and motivations stem from what they call value. Therefore, as long as farmers do not reach their expected value, this orientation towards other channels will continue.

In the midst of the farmers' unmet satisfaction of the chain value, conventional farmers' philosophies were more consistent with Lantmännen due its more focus on production volume. While this proposes value to the conventional farmers and motivates them to produce more in order to take advantage of the price surplus per kilo, there is no value to organic farmers whose strategy is based on the niche market and high quality products. By referring to the Bocken *et al.* (2013), it can be seen that the cooperative's BM contradicts somewhat with what the organic farmers call value. Hence, Lantmännen has to identify such problems and work to solve them. In this regard, Civera *et al.* (2019) point out that hearing the stakeholders' voice is a way to ensure a long-term and trust-based relationships. Also, Lazzarini *et al.* (2001) express that an organization can have a greater competitive advantage when it can interact well with its key resources. Since farmers are the cooperative's key resources, it has to address this issue to maintain its SC dynamism.

One of the issues that farmers emphasized, was the proper market for protein grains such as peas and beans and the innovative foods derived from these legumes. According to Fischer & Hartmann (2010), innovation in the agri-food sector can be gained by a combination that is not widely used. Since according to Fischer & Hartmann (2010), innovation is a positive factor in the dynamism of the agri-food sector and overcoming constraints, focusing more on protein grains can empower farmers, but also all chain actors. Apart from protein grains, the need for precision farming to increase crop yields has also been seen among farmers. It is stated by Cucagna & Goldsmith (2018) that company size, access to finance, and technology are among factors that can lead to value creation. Thus, precision farming technology can create value for farmers. In other words, by providing these services, the cooperative can increase the productivity of farmers and help them capture more value. This is an issue that can increase the farmers' satisfaction and consequently make them more inclined to the cooperative. These exchange of values, as Faure *et al.* (2018) stress, leads to sustainable development.

Another discussion is about the power of large chain stores in Sweden. As farmers stressed, Lantmännen has a weaker position than these stores in terms of bargaining power. It means that this cooperative is unable to compete with them in order to capture more value to be distributed among farmers. According to Boehlje *et al.* (1999), the least interchangeable and powerful source for other companies can

control the function of the chain. Since Lantmännen has had the first rank of business to business in 2019 among Swedish companies (Sustainable Brand Index™ 2020), they are very close to the downstream chain. Therefore, one way to create better balance in the chain is to use the same power that Boehlje *et al.* (1999) have pointed out. This means that large chain stores have no better alternative in the market and must adjust their behavior.

However, the opposite can happen. Given that these stores have power over the chain, they can also be an irreplaceable source both for Lantmännen and the final consumers. At first glance, it may be inferred that the cooperative can take full control of them and, in a way, control the chain. However, on closer inspection, it can be understood that stores are the ones who do control the chain. Since all activities in the SC are aimed to meet end consumer satisfaction (Chopra & Meindl 2016), and given that these stores are the closest actor to the end customers, they are more likely to control the chain than Lantmännen. In addition, they have their own loyal customers who are in line with them. Therefore, if these stores' bargaining position in making a profit fall in danger, they may shift from domestic market to foreign markets. This shift, because the price of grains is global, can be successful, meaning that they can import the required goods from other channels at the desired price and still be profitable in the market. A closer look reveals that this can even jeopardize the cooperative's position, with far-reaching consequences for farmers. In fact, it means that the cooperative depends on these stores to survive. As a result, Lantmännen should keep pace with them. It is also stated by Crook & Combs (2007) that the strongest actor in the chain can force other actors to take actions. All in all, a comprehensive collaboration throughout the chain is needed to create a better balance and motivate all actors. As seen, this chain is unfairly distributed while a successful SCM should distribute the spoils of the chain fairly among all actors (Crook & Combs 2007).

6.2.3. Impact of BM changes on farmers' operations and costs

As mentioned, Lantmännen is a strong sales channel for farmers due to its market power. That is, to the extent that farmers benefit from participating in this cooperative's SC, it means that they have been able to reduce farmers' risk-taking activities. Referring to the SC governance and structure (Lazzarini *et al.* 2001), here the power and structure of Lantmännen has been able to reduce the farmers' transaction costs.

In addition, Lantmännen provides seeds and fertilizers for farmers which means that they could control the functions of the chain and have been able to prevent possible opportunistic behaviors that force farmers to buy them at extra cost. As Lazzarini *et al.* (2001) point, this shows the power and proper governance of an

organization. This also refers to the same concept of SSCM (Seuring & Müller 2008). It means that by controlling the flow of materials, Lantmännen could address farmers' economic sustainability.

However, participation in the BM of Lantmännen, has imposed some problems and costs on farmers. One of the most important issues, is the Lantmännen's contracts. As it is mentioned by an organic farmer, sometimes he had to buy grain with higher prices from other farmers to deliver a certain volume of produce to the cooperative. It has already been argued that tightening contracts is to reduce opportunistic behaviors. However, again a conflicting value is seen here (Bocken *et al.* 2013). The complexity of contracts and not benefiting from the economies of scale of large organizations are what Jia & Huang (2011) and Davis (2019) also referred to. Therefore, the cooperative should prioritize addressing this issue.

Another important issue, is the implementation of Lantmännen's wheat climate concept. Given that this concept, according to the farmers, does not include full financial support, they were reluctant to do so. Contrary to this, Saltå Kvarn's toolbox is considered as a successful program. According to this toolbox, farmers can get a larger share per kilogram of delivered crop based on the points collected from the implementation of environmental programs. This company is in the SMEs category (Jonsson 2017) and is not comparable to Lantmännen in terms of scale and structure, but has been able to design a clear and voluntary incentive program to motivate farmers. Therefore, according to Beske (2012), who notes that all stakeholders, both weak and strong, can innovate, this program can be modeled among all grain companies.

The implementation of KRAV and CAP regulations also along with government bureaucracy and time-consuming paperwork, have made trade difficult for farmers. Since grain companies must operate according to a set of defined rules and standards, farmers who are members of them and sell to them must follow these principles. However, the cost, as farmers have stressed, should not be borne by them. They need financial support, otherwise this easily can threaten their economic conditions. Here, the role of government matters. Government coercion and incentives is a factor that can lead to the stronger implementation of SSCM (Brandenburg & Rebs 2015). Therefore, if farmers can be supported by the government to implement environmental programs, they will be more motivated to participate in collective action, which will help to the creation of an SSCM in the grain sector. It was explicitly stated by all farmers that the only way to fully implement environmental programs is to have government support. Therefore, the government can play an important role not only in satisfying farmers to implement environmental programs and its sustainability, but also by motivating farmers can help maintain the social sustainability of this sector.

7. Conclusion

This Chapter presents a general conclusion of what has the researcher gained in this study. In the following, study limitations and suggestions for future studies are mentioned.

This study is done among active Swedish grain farmers to understand how business model innovation (BMI) in farm businesses changes their perceived satisfaction with supply chain (SC) value capture. The studied primary production phase was consisted of farms in variable sizes focusing on conventional and organic crops. Accordingly, farmers sought to strengthen their position in the chain and gain a better competitive advantage by participating in grain companies' BMI as well as implementing their own unique strategies.

Generally, it is stated that a good platform can lead to the creation of processes and products for the benefit of farmers and compensate for the effects of market instability (Thiele *et al.* 2011; Civera *et al.* 2019). As Valentinov (2007) note, agricultural cooperatives have emerged with the aim of creating more bargaining power for farmers, reducing transaction costs, and counteracting opportunistic behaviors in the chain through controlled activities. Numerous studies have also pointed to the successful role of these cooperatives' collective actions (Fischer & Qaim 2012). In this regard, although little empirical evidence is available on the food grains, however, its long chain which requires addressing issues such as high quality and food safety, has been a motivating factor for farmers to reduce many related costs (*ibid.*).

This study showed that, in Sweden, the agricultural cooperative Lantmännen has provided better bargaining power for farmers by intermediating some of the turmoil in the grain market. This cooperative, by creating better market position for farmers, has been able to build mutual trust, commitment, and long-term relationships. Moreover, by purchasing crops at market price, creating seasonal opportunities, and holding meetings and training sessions as well as providing services such as seeds and fertilizers for farmers, Lantmännen has been able to create a dynamic grain SC.

In the meantime, the cooperative's incentive systems for surplus production as well as storage deals, have offered opportunities for farmers to capture more value of this chain. This capability has also been led to the high motivation of conventional

farmers to produce without any worries. However, although the cooperative's standard SC, offers good opportunities for conventional farmers, it is shown that specified organic grain farmers who work with this cooperative, have sought alternative channels. The reason is that this cooperative is designed to respond the collective actions and bulk production plans. Thus, it can be concluded that because large standardized cooperatives are developed to support the standard marketing, they are not always helpful and sometimes alternative channels may need to meet the specialized and niche producers' needs.

The empirical findings also suggest that large cooperatives without strong position at the end of the SC can only marginally increase the power of producers. This may be due to the growing global market for standard commodities. As it is discussed, farmers are not satisfied with SC value capture, and due to Lantmännen's apparent inability to capture and transfer value-added from retailers, a very of farmers' BMI is directed towards finding alternative sales channels. At the same time, farmers are active in optimizing their standard BM, mostly by reducing costs, but also in some cases by increasing volume.

7.1. Further studies

As explained in Chapter 3, although the researcher tried to have a great variety in the selection of his case studies, the short time frame of the study did not allow him to conduct more interviews. This issue can be considered in future studies.

Also, the farms studied in this research were mostly located in areas where Swedish agriculture is concentrated on. However, expanding geographical area and increasing the number of interviews can lead to new results.

Furthermore, organic farms involved in this research were about 100 hectares or less, while all conventional farms were much larger. Therefore, it is necessary to study organic farms with a larger area and conventional farmers who work on a small scale to gain more insights.

Besides, due the cooperative's inability to compete with Swedish retailers, studying between these two phases of the Swedish grain SC can identify obstacles in this area.

Finally, the lack of noticeable price differences between organic and conventional products, while this difference, according to the farmers, is seen in chain stores, is an issue that needs more research.

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¹⁴ In English: Royal Swedish Academy of Agriculture and Forestry

Appendix 1: Semi-structured questionnaire ¹⁵

- Introduction
- Description of the study and its aim
- Assurance of confidentiality and anonymity, GDPR etc.

1) Can you describe your farm to me?

- Location
- Acreage
- Crops/animals
- Buildings/equipment
- Length of involvement in the farm
- Family farm/if not type of governance

With focus on Grain

2) How do you manage your business side of farming?

- Products/services offered
- Production strategy (e.g. standardized bulk, niche/specialized)
- Customers
- Customer demands/needs
- Cost strategy
- Main cost drivers
- Fixed vs. variable costs
- Income strategy
- Share of farm income from different products/services
- Income stability
- Pricing/adding value
- Margins
- Satisfaction with current profits

¹⁵ Designed by the researcher

- Current threats/opportunities
- Rules, obstacles or restrictions in your work process
- Significant network partners

3) Can you describe recent and/or ongoing changes you have made in your farm business (e.g. joining a certification program or acquiring new technology)?

- Reasons for the change (for example, it is easier, more reliable, compatible with existing technologies)
- Effects of the change on the farm
- The merit of this change for you (e.g. margin of safety, direct sale, more added value)
- Effects of the change on the product quality
- Effects of the change in turnover/costs/revenue
- Effects of the change on your environmentally friendly practices
- Problems and challenges

4) How have you been supported in making this change?

- Information packages/training programs
- Reduced threats/obstacles
- Incentives to be active
- The kind of equipment/technology you needed
- Feedback from market reaction
- Connect to other farms/jobs you need

5) Farmer's perception of his/her contributions and returns in the supply chain

- Do you feel that you are getting an equitable share of the chain value?
- Do you feel the recent changes you have made in your operations – that have contributed to increased end-consumer value – have been adequately reimbursed?

Appendix 2: Abductive coding and data analysis

In the present study, the researcher has reviewed the following articles in order to understand exactly how to use abductive coding and data analysis using Excel and Word. Therefore, he highly recommends to students to read through them since they help to facilitate their coding and analysis process.

- Ose, S.O. (2016). Using Excel and Word to structure qualitative data. *Journal of applied social science*, vol. 10 (2), 147-162.
- Skjott Linneberg, M. & Korsgaard, S. (2019). Coding qualitative data: A synthesis guiding the novice. *Qualitative research journal*, vol. 19 (3), 259-270.

The following is a brief description of how data is encoded:

To begin with, the researcher started by introducing 6 deductive codes including Farm Description, Farm Activities, Cost Strategy, Income Strategy, Problems & Challenges, and Satisfaction with Current Profits, all of which stemmed from his theoretical frame of reference. Then, according to the abductive approach and by reading the text line by line, he created 35 sub-codes to the ones he had already started. In the meantime, he also left out codes that had nothing to do with his research questions. After the researcher identified the most important and common codes that could make up the story, he began the analysis.

In the next two pages, sub-codes and a general schematic – 2 pages of the analyzed data by Excel – are given respectively:

Interviews - Microsoft Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW

Cut Copy Paste Format Painter

Clipboard

Calibri 11 A⁺ A⁻

B I U

Font

Alignment

Wrap Text Merge & Center

Number

BN37

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Farm	1															
2	Experience	2															
3	Location	3															
4	Acreage	4															
5	Type	5															
6	Crops	6															
7	How farm is run	7															
8	Customers	8															
9	Contracts	9															
10	Climate concept	10															
11	Buyers' characteristics	11															
12	Incentive system	12															
13	Trainings and packages	13															
14	Main costs	14															
15	Energy saving strategy	15															
16	Employees' salary strategy	16															
17	Income sources	17															
18	Strategy in grain	18															
19	Technology problem	19															
20	Climate concept compensation	20															
21	Fair share	21															
22	Satisfaction with level of income on /	22															
23	Buyers special demand	23															
24	Machinery strategy	24															
25	Rules, regulations, and restrictions	25															
26	Problem with buyers	26															
27	Other partners	27															
28	Fertilizer strategy	28															
29	Fuel strategy	29															
30	Weather problems	30															
31	Efficiency strategy	31															
32	Land problems	32															
33	Organic fluctuations	33															
34	Animals	34															
35	Seed strategy	35															
36																	
37																	

Interview 3 Interview 4 Interview 5 Interview 6 Interview 7 Codes Combine

READY

Interviews - Microsoft Excel										
FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW										
Clipboard		Font		Alignment		Number		Styles		
F1		X ✓ fx		Farm						
A	B	C	D	E	F	G	H	I	J	
109	Farmer 2	Farm activities	15	Customers?	Customers?(Farmer 2 Farm activities 15)	8	1			
110	Farmer 2	Farm activities	16	Lantmännen and a few deals with	Lantmännen and a few deals with some buyers (Farmer 2 Farm activities 16)	8	1			
111	Farmer 3	Farm activities	15	Customers?	Customers?(Farmer 3 Farm activities 15)	8	1			
				He often trades through a friend who is a grain exporter, and dealing with him gives the farmer more freedom. In addition, the farmer sometimes trades with	He often trades through a friend who is a grain exporter, and dealing with him gives the farmer more freedom. In addition, the farmer sometimes trades with					
112	Farmer 3	Farm activities	16	freedom. In addition, the farmer	Lantmännen (member) and a small local cooperative called Lokal	8	1			
113	Farmer 4	Farm activities	15	Customers?	Customers?(Farmer 4 Farm activities 15)	8	1			
				Private buyer called Forsbecks AB (most organic), Lantmännen (most conventional), sales of rapeseed	Private buyer called Forsbecks AB (most organic), Lantmännen (most conventional), sales of rapeseed and some conventional crops to Lovanggruppen, and he deals with some other farmers. (Farmer 4 Farm activities 16)	8	1			
114	Farmer 4	Farm activities	16	Customers?	Customers?(Farmer 4 Farm activities 16)	8	1			
115	Farmer 5	Farm activities	17	Customers?	Customers?(Farmer 5 Farm activities 17)	8	1			
				The farmer sells her wheat and oats to a grain company called Saltå Kvarn, and	The farmer sells her wheat and oats to a grain company called Saltå Kvarn, and	8	1			
116	Farmer 5	Farm activities	18	beans to various farmers. (Farmer 5 Farm activities 18)	beans to various farmers. (Farmer 5 Farm activities 18)	8	1			
117	Farmer 6	Farm activities	17	Customers?	Customers?(Farmer 6 Farm activities 17)	8	1			
118	Farmer 6	Farm activities	18	Lantmännen (member), Svenska	Lantmännen (member), Svenska Foder and other mills. (Farmer 6 Farm activities 18)	8	1			
119	Farmer 7	Farm activities	17	Customers?	Customers?(Farmer 7 Farm activities 17)	8	1			
120	Farmer 7	Farm activities	18	Lantmännen and Saltå Kvarn,	Lantmännen and Saltå Kvarn, other dairy farms (Farmer 7 Farm activities 18)	8	1			
121				Contracts?	Contracts	9	0			
122	Farmer 1	Farm activities	17	Sale to Lantmännen is according to the contracts which is based on	Sale to Lantmännen is according to the contracts which is based on offering a high-volume and high-quality product. (Farmer 1 Farm activities 18)	9	1			
123	Farmer 1	Farm activities	18	Contracts?	Contracts?(Farmer 1 Farm activities 17)	9	1			
124	Farmer 2	Farm activities	17	As a member of Lantmännen, I must work under pre-determined	As a member of Lantmännen, I must work under pre-determined contracts, such as the delivery of high quality products or specific volumes. (Farmer 2 Farm activities 18)	9	1			
125	Farmer 2	Farm activities	18	Contracts?	Contracts?(Farmer 2 Farm activities 17)	9	1			
126	Farmer 3	Farm activities	17	Sometimes trades with Lantmännen under different contracts.	Sometimes trades with Lantmännen under different contracts. (Farmer 3 Farm activities 18)	9	1			
127	Farmer 3	Farm activities	18	Contracts?	Contracts?(Farmer 3 Farm activities 17)	9	1			
128	Farmer 4	Farm activities	17	With Lantmännen (sometimes in	With Lantmännen (sometimes in low volume)(Farmer 4 Farm activities 18)	9	1			
129	Farmer 4	Farm activities	18	Contracts?	Contracts?(Farmer 4 Farm activities 17)	9	1			
130	Farmer 6	Farm activities	19	He sells most of his crops to Lantmännen, and says they have a market price list	He sells most of his crops to Lantmännen, and says they have a market price list	9	1			

Interviews - Microsoft Excel										
FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW										
Clipboard		Font		Alignment		Number		Styles		
F1		X ✓ fx		Farm						
A	B	C	D	E	F	G	H	I	J	
159	Farmer 3	Farm activities	23	Incentive system?	Incentive system?(Farmer 3 Farm activities 23)	12	1			
160	Farmer 3	Farm activities	24	Incentive system of Lantmännen is	Incentive system of Lantmännen is of great value. (Farmer 3 Farm activities 24)	12	1			
161	Farmer 5	Farm activities	21	Incentive system?	Incentive system?(Farmer 5 Farm activities 21)	12	1			
				Saltå Kvarn has a toolbox that farmers can earn higher points by performing various environmental	Saltå Kvarn has a toolbox that farmers can earn higher points by performing various environmental activities such as planting trees, using renewable fuel, etc., and have an extra price per kilo of delivered crop. (Farmer 5 Farm activities 22)	12	1			
162	Farmer 5	Farm activities	22	Incentive system?	Incentive system?(Farmer 5 Farm activities 22)	12	1			
163	Farmer 6	Farm activities	23	Through incentive schemes of Lantmännen you can be get paid	Through incentive schemes of Lantmännen you can be get paid the extra per kilo. (Farmer 6 Farm activities 24)	12	1			
164	Farmer 6	Farm activities	24	Incentive system?	Incentive system?(Farmer 6 Farm activities 23)	12	1			
165	Farmer 7	Farm activities	23	According to the farmer, Lantmännen and Saltå Kvarn use the incentive system to pay the extra price per kilo to the farmers in exchange for receiving more	According to the farmer, Lantmännen and Saltå Kvarn use the incentive system to pay the extra price per kilo to the farmers in exchange for receiving more volume. (Farmer 7 Farm activities 24)	12	1			
166	Farmer 7	Farm activities	24	the incentive system to pay the	Trainings and packages	13	0			
167				Trainings and packages?	Trainings and packages?(Farmer 1 Farm activities 25)	13	1			
168	Farmer 1	Farm activities	25	Training courses held by Lantmännen and their educational counseling are effective and with the help of this cooperative, I have been able to produce a special kind of	Training courses held by Lantmännen and their educational counseling are effective and with the help of this cooperative, I have been able to produce a special kind of oat for allergic people. (Farmer 1 Farm activities 26)	13	1			
169	Farmer 1	Farm activities	26	Trainings and packages?	Trainings and packages?(Farmer 1 Farm activities 23)	13	1			
170	Farmer 2	Farm activities	23	Advising on the production of	Advising on the production of certain products(Farmer 2 Farm activities 24)	13	1			
171	Farmer 2	Farm activities	24	Trainings and packages?	Trainings and packages?(Farmer 2 Farm activities 25)	13	1			
172	Farmer 3	Farm activities	25	He believes that Lantmännen's free government-funded courses are	He believes that Lantmännen's free government-funded courses are useful in the growth of his products. (Farmer 3 Farm activities 26)	13	1			
173	Farmer 3	Farm activities	26	Trainings and packages?	Trainings and packages?(Farmer 3 Farm activities 21)	13	1			
174	Farmer 4	Farm activities	21	Lantmännen has a large R&D unit and give good advice to farmers, especially lately	Lantmännen has a large R&D unit and give good advice to farmers, especially lately on protein products. (Farmer 4 Farm activities 22)	13	1			
175	Farmer 4	Farm activities	22	Trainings and packages?	Trainings and packages?(Farmer 4 Farm activities 23)	13	1			
176	Farmer 5	Farm activities	23	Saltå Kvarn has annual meetings where farmers meet and share their ideas about	Saltå Kvarn has annual meetings where farmers meet and share their ideas about growing certain crops. (Farmer 5 Farm activities 24)	13	1			
177	Farmer 5	Farm activities	24	Trainings and packages?	Trainings and packages?(Farmer 5 Farm activities 25)	13	1			
178	Farmer 6	Farm activities	25	He attends the cooperative	He attends the cooperative meetings. (Farmer 6 Farm activities 26)	13	1			
179	Farmer 6	Farm activities	26	Trainings and packages?	Trainings and packages?(Farmer 6 Farm activities 25)	13	1			
180	Farmer 7	Farm activities	25	Trainings and packages?	Trainings and packages?(Farmer 7 Farm activities 25)	13	1			

Appendix 3: Farms' BMs

In this appendix, the BM of all farms is outlined in the order described in sub-section 4.2 as below:

Farm BM number 1

Business Model Canvas				
Key partners <ul style="list-style-type: none">- Lantmännen (member)- Swedish Agro AB- BillerudKorsnäs AB (Swedish company producing new fiber-based packaging materials)- Get advice from some companies about EU applications	Key Activities <ul style="list-style-type: none">- Sowing, harvesting, drying, and storing grains- Renting out houses and garages to people	Value Propositions <ul style="list-style-type: none">- Bulk production under Lantmännen’s instructions	Customer Relationships <ul style="list-style-type: none">- Contacts and contracts	Customer Segments <ul style="list-style-type: none">- Lantmännen- Swedish Agro AB (the farmer’s barley is sometimes sent to this company for beer production)- BillerudKorsnäs AB
	Key resources <ul style="list-style-type: none">- Employees- Agricultural machinery (7 tractors, 2 harvesters, and drier)- Storage, buildings and garages- Solar panel		Channels <ul style="list-style-type: none">- Contacting buyers- Lantmännen’s meetings	
Cost Structure <ul style="list-style-type: none">- Fuel (900,000 SEK a year)- Employees’ salary- Agricultural machines’ maintenance- Buying seeds and fertilizers from Lantmännen- Buying chemicals from other farmers			Revenue Structure <ul style="list-style-type: none">- Sale of grains to Lantmännen- Sale of barley to Swedish Agro AB- Rent out buildings and garages to people- Sale of wood to BillerudKorsnäs AB	

Farm BM number 2

Business Model Canvas				
Key partners - Lantmännen - Svenska Foder - Other farmers that farmer helps them in baling	Key Activities - Harvesting, drying, and storing grains - Handling the green protein’s request - Renting out business offices and houses to people	Value Propositions - Growing bulk production for export through Lantmännen under their instructions	Customer Relationships - Certain contracts with Lantmännen	Customer Segments - Lantmännen - Svenska Foder
	Key resources - Employees - Agricultural machinery (combine, baler, seed drill, and tractor) - Storage - Large buildings and offices - Solar panel and bio power plant		Channels - Lantmännen ’s district - Contacts to buyers	
Cost Structure - Employees’ salary - Fuel (35% renewable) - Oil consumption - Machine maintenance - Buying seeds			Revenue Structure - Sale of grains to Lantmännen - Sale of forage to Svenska Foder. - Money received through renting out business offices and houses - Selling a small amount of timber	

Farm BM number 3

Business Model Canvas				
Key partners <ul style="list-style-type: none">- Grain exporter (his friend)- Lantmännen (member)- Other farmers to whom he is connected through Lantmännen- Neighbor Farm- Lokal Föreningen (small Swedish cooperative)- Vikima Seed (a Danish company that advises on spinach)- Hushållningssällskapens förbund (Home Communities Association, which provides advice to agriculture and rural communities)	Key activities <ul style="list-style-type: none">- Maintaining and servicing the crops Key resources <ul style="list-style-type: none">- Employees- Agricultural machinery (tractor, combine, harvester, irrigation machines, and sprayer)- Equipment for making seedbed- Storage- Unlimited water supply (deep wells)	Value Propositions <ul style="list-style-type: none">- Sustainable farming- Strong network with buyers	Customer Relationships <ul style="list-style-type: none">- Contacts and meetings- Lantmännen’s web Channels <ul style="list-style-type: none">- Contacting:<ul style="list-style-type: none">• Lantmännen• Lokal Föreningen• His friend- Attending in Lantmännen’s district meetings	Customer Segments <ul style="list-style-type: none">- Lantmännen- Lokal Föreningen- Grain trader (his friend)- Lettuce and vegetables market
Cost Structure <ul style="list-style-type: none">- Fuel- Fertilizers- Chemicals- Seasonal employees’ salaries			Revenue Structure <ul style="list-style-type: none">- Sales of green vegetables- Sales of grains to: Lantmännen, Lokal Föreningen, and his friend (grain trader)	

Farm BM number 4

Business Model Canvas				
Key partners <ul style="list-style-type: none">- Bank- Lantmännen (member)- Forsbecks AB- Lovanggruppen- A farmer advisor in organic farming- Tax advisor- Get advice on the EU application- Friends who as a group get together to discuss related issues	Key Activities <ul style="list-style-type: none">- Sowing, harvesting, and sometimes drying the crops- Contributing to some sustainability concepts (in lower volumes)	Value Propositions <ul style="list-style-type: none">- High quality products which force the customers to offer better prices to buy them	Customer Relationships <ul style="list-style-type: none">- Certain contracts with Lantmännen- Deal with Forsbecks AB, Lovanggruppen, and other farmers	Customer Segments <ul style="list-style-type: none">- Lantmännen (member)- Forsbecks AB (a family company)- Lovanggruppen- Some deals with neighbours and other farmers
	Key resources <ul style="list-style-type: none">- Employees- Agricultural machinery (4 tractors, combine, and loading machines)- Storage only in one farm		Channels <ul style="list-style-type: none">- Contact to business partners- Checking the Lantmännen and world price list	
Cost Structure <ul style="list-style-type: none">- Fuels- Fertilizers, fungicides, and insecticides- Employees’ salary- Second hand machineries			Revenue Structure <ul style="list-style-type: none">- Sales of grains to Lantmännen, Forsbecks AB, Lovanggruppen (rapeseed and also some conventional crops), and other farmers- Salary received as an university employee (20-25% of his total income), and salary received from advisory programs (50,000 SEK annually)	

Farm BM number 5

Business Model Canvas				
Key partners <ul style="list-style-type: none">- Saltå Kvarn- Her brother- Other farmers who buy bean- Farmers who meet through Saltå Kvarn’s meetings and work together- Municipality who provide advice for her Bed & Breakfast services	Key Activities <ul style="list-style-type: none">- Sowing, harvesting, drying, and storing the products- Animal breeding- Bed & Breakfast services (create recreations such as pony riding)	Value Propositions <ul style="list-style-type: none">- Organic production- Get along with the Saltå Kvarn’s instructions- Face-to-face interaction with people who buy meat boxes and rent houses	Customer Relationships <ul style="list-style-type: none">- Contacts and annual meetings in Saltå Kvarn- Face-to-face interactions with bean and meat boxes’ buyers as well as Bed & Breakfast customers	Customer Segments <ul style="list-style-type: none">- Saltå Kvarn- Farmers who buy beans- Customers who buy meat boxes- People who come to rent houses in summer
	Key resources <ul style="list-style-type: none">- Employees- Agricultural machinery (Cameleon, combine, harvester, dryers, and the ones that make hay)- Cows’ wagons- Solar panels		Channels <ul style="list-style-type: none">- Contact to Saltå Kvarn- Direct sales to customers	
Cost Structure <ul style="list-style-type: none">- Money paid to rent another farm (45 hectares)- Employees’ salary- Renewable fuel			Revenue Structure <ul style="list-style-type: none">- Sale of grains to Saltå Kvarn- Sale of bean to other farmers- Money gained through Bed & Breakfast services- Direct sale of meat boxes to customers (4 times a year)	

Farm BM number 6

Business Model Canvas				
Key partners <ul style="list-style-type: none">- Lantmännen (member)- Upplandsbondens (Swedish meat cooperative)- Svenska Foder- Staffare AB (a Swedish agricultural machinery service company)- Bil & Traktorservice (Agricultural machinery sales agent)- Other farmers	Key Activities <ul style="list-style-type: none">- Sowing and harvesting grains- Making hay and silage for animals- Cows’ breeding	Value Propositions <ul style="list-style-type: none">- Producing organic grains- Face-to-face interaction with customers in meat section	Customer Relationships <ul style="list-style-type: none">- Contacting and attending in Lantmännen’s meetings- Contact to Svenska Foder	Customer Segments <ul style="list-style-type: none">- Lantmännen- Svenska Foder- Upplandsbondens- Direct sale of meat boxes to customers
	Key resources <ul style="list-style-type: none">- Agricultural machinery (tractor, combine, harvester, sowing machine, and equipment to produce hay and silage)- Houses to rent out- Solar panel		Channels <ul style="list-style-type: none">- Contact to:<ul style="list-style-type: none">● Lantmännen● Svenska Foder● Other mills- Attending in cooperative meetings	
Cost Structure <ul style="list-style-type: none">- Renewable fuel- Plastic for silage- Repairing agri-machines- Buying seeds (sometimes from Lantmännen)- Buying fodder for cows			Revenue Structure <ul style="list-style-type: none">- Sale of grain to Lantmännen- Sale to Svenska Foder- Meat sale- Renting out houses to the people	

Farm BM number 7

Business Model Canvas				
Key partners <ul style="list-style-type: none">- Lantmännen (member)- Saltå Kvarn- Trainees and volunteers	Key activities <ul style="list-style-type: none">- Sowing, harvesting, and drying grains- Animal breeding- Direct sales of food packages (on a very small scale)	Value Propositions <ul style="list-style-type: none">- Organic farming- Face-to-face interaction with food buyers	Customer Relationships <ul style="list-style-type: none">- Certain contracts with Lantmännen and Saltå Kvarn	Customer Segments <ul style="list-style-type: none">- Lantmännen- Saltå Kvarn- Direct food sales to customers- Farmers who rent farmland
	Key resources <ul style="list-style-type: none">- Employees- Agricultural machinery (combine, harvester, sowing machine, and driers)- Moveable shelter for cows- Solar panel		Channels <ul style="list-style-type: none">- Contacting Lantmännen and Saltå Kvarn- Saltå Kvarn and Lantmännen’s meetings	
Cost Structure <ul style="list-style-type: none">- Renewable fuels- Employees’ salary			Revenue Structure <ul style="list-style-type: none">- Received money by renting 130 hectares of farmland- Sale of grains to Lantmännen and Saltå Kvarn- Income from dairy cows- Direct sale of food to customers (very low)	